THE BRICKBUILDER

VOLUME XX FEBRUARY 1911 NUMBER 2

PUBLISHED MONTHLY BY ROGERS & MANSON

85 Water Street - - - Boston, Massachusetts

Entered at the Boston, Mass., Post Office as Second-Class Mail Matter, March 12, 1892.

Copyright, 1911, by ROGERS & MANSON

Subscription price, mailed flat to subscribers in the United States, Insular Possessions and Cuba . . . . . $5.00 per year
Single numbers . . . . . 50 cents
Subscription price, mailed flat to subscribers in Canada . . . . . $5.50 per year
To Foreign Countries in the Postal Union . . . . . $6.00 per year

SUBSCRIPTIONS PAYABLE IN ADVANCE

For sale by all news dealers in the United States and Canada. Trade supplied by the American News Company and its branches.

ADVERTISING

Advertisers are classified and arranged in the following order:

	PAGE		PAGE
Agencies — Clay Products	II	Brick Enameled	III and IV
Architectural Faience	II	Brick Waterproofing	IV
" Terra Cotta	II and III	Fireproofing	IV
Brick	III	Roofing Tile	IV

Advertisements will be printed on cover pages only.

CONTENTS

PLATE ILLUSTRATIONS

FROM WORK BY

G. HOWARD CHAMBERLIN; CRAM, GOODHUE & FERGUSON; PARKER MORSE HOOPER; JANSSEN & ABBOTT; LORD & HEWLETT; PARISH & SCHROEDER.

LETTERPRESS

PAGE

CHURCH OF SAN JOSE, PUEBLA, MEXICO ..... Frontispiece

THE PRESENTATION OF PRELIMINARY STUDIES OF ARCHITECTURAL SUBJECTS.—PART II. *H. G. Ripley* 23

THE MANUAL TRAINING HIGH SCHOOL.—PART II. ..... *William B. Ittner* 27

THE HEATING AND VENTILATION OF CHURCHES.—PART I. ..... *Charles L. Hubbard* 31

THE PRINCIPLES OF ARCHITECTURE.—PART II. ..... *William L. Mowell* 35

THE FORTY-FOURTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS 37

PLATE ILLUSTRATIONS—DESCRIPTION. 39

EDITORIAL COMMENT AND MISCELLANY 39

CHURCH OF SAN JOSÉ, PUEBLA, MEXICO.

The polychrome decoration in tile of this church, is applied on the lantern, dome and "*cimborio*" (clere-story); two colors only being used — the dark shade represents yellow and the light tone, light blue.

The Presentation of Preliminary Studies of Architectural Subjects.

II.

BY HUBERT G. RIPLEY.

"Freedom for art's sake is simplicity."
— Andronicus Cyrrhestes.

THE position of a writer on architecture is, in a way, analogous to that of the teacher, although it is far from the intention of this series to assume, like Hermes Trismegistus (one of the earlier architects), the attributes of euphuistic pragmatism.

A rising young teacher in one of the architectural schools, when asked how he conducted his classes, said, "I make the very first lecture as confusing as possible, so that the minds of my pupils are wandering in the crepuscular umbrage of incertitude, and very soon two-thirds of the class stay away or take some other course. Those who remain, and have stood the first lectures, will stand for anything."

It is not supposed that anyone who reads these articles (assuming that anyone does read articles published in an architectural magazine) will find anything new in them. All that is worth saying has already been said, and the whole subject from batter boards to hardware, from reinforced concrete to period furniture, from sill-cocks and tapestries to asbestos shingles and book-plates, has been threshed out, gleaned, garnered, distilled and inflated, and the withered husks left to fester on the compost heap. All that remains is to collect in a few thousand choice words, crisp and sparkling, some of the methods and machinations employed by our well known contemporaries in separating themselves from the creatures of their fancy; in displaying to a cultured and critical audience the congealed music of Parnassus, before it takes its concrete form in sometimes, alas, a too indestructible material.

Lest it may be supposed that we are floundering about in a peripatetic manner without relation, harmony or due sequence being observed, let us turn for a moment to M. V. Pollio, our friend in need. Note the headings of his chapters — how he skips deftly from *music* to *sand* — now considering the construction of *Palestræ*, now the *signs of the Zodiac;* each subject treated naively and exhaustively without one superfluous word.

No article on a subject related to architecture is complete, aldermanic, and well rounded, without some subtle reference to "the twin arts of architecture and music." While this may not be the best place to drag this in, it might be well to get it over with before it is forgotten. Many a drawing has been rendered until it sings, and our Gallic friends frequently allude to harmonies produced by the "chic chic" in some exquisite bit of drafting. Color may be imitated in black and white, and who has not imagined symphonies in the "soft, dull tones" of cramosi, ustium, bistre and dun-amber, as, in the hands of a master like Guerin, they are weaved, blended, fused and mated until our very heartstrings are wrung.

It will not be possible to mention all those whose illustrations have made the coming of the magazines and various club catalogues a pleasure and delight in the past. Nowadays photographs of executed work form a great

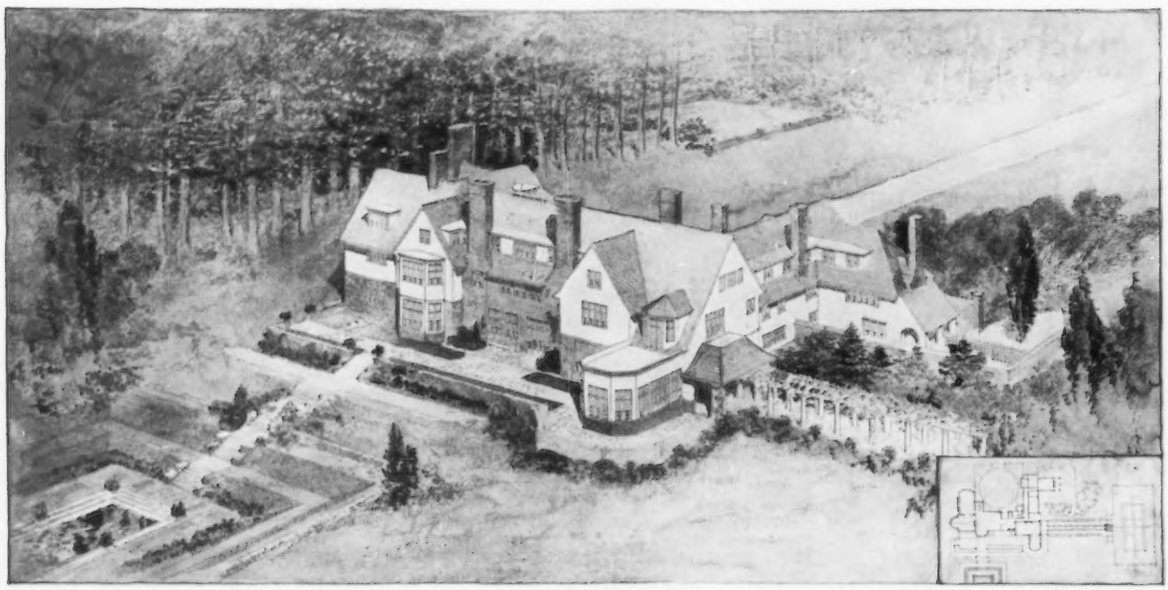


FIG. VII.

Study of a country house, J. Lovell Little, Jr., architect. The original perspective was laid out on brown paper and its drawing involved a great deal of labor and study. The final drawing was carefully rendered in pencil on white tracing paper and then mounted on cardboard and slightly tinted. Architects are coming more and more this spring to see the value of having their buildings studied from elevated view-points, particularly when, as in this case, the grounds form an integral part of the whole design.

percentage of the illustrations, but there is in a good drawing or sketch, a charm that even the finest carbon print or photogravure does not possess. It would be invidious, however, not to mention the "doyen" of the guild, to whom, more than anyone else, the budding draftsman turns for sustenance and support. We refer to Mr. D. A. Gregg, who has set the pace for many years, and keeps pushing the mark further and further ahead, with a wide range of drawings and sketches in many mediums. He developed and showed the possibilities of pencil rendering on tracing paper touched up with color, in a manner not before realized or attempted, and these sketches possess a redundant resiliency peculiarly their own.

To come right down to brass tacks, the method is as follows:

Make the drawing, either plan, elevation, section or perspective, on any old piece of paper. Rub it, scratch it, get it all mussed up, do anything you want to with it, even burn it a little with cigarette stubs, only leave enough so that some sort of outline remains that will show through the tracing. If you go too far with the study, it may be necessary to start all over again. Then gum or tack down over this mess, a fresh, smooth piece of thin white tracing paper. After all is said and done, there is no use getting away from the fact that there is one kind of tracing paper better than all the others for this purpose, and were it not that we might be suspected of an alliance with the octopus, we would speak right out and name it.

Use moderate care in making the final drawing, to keep a crisp fresh line, and when all the pencil work is done, blow lightly and evenly with fixatif all over the tracing. Now lay the drawing face down on a fresh piece of paper and soak it thoroughly with clean water. Next, spread a thin coat of paste all over the back, smoothing out the wrinkles and leaving the drawing perfectly flat. Lay a sheet of cardboard over this, reverse the cardboard, and, with another sheet of clean tracing paper and a celluloid triangle or a scale, rub the tracing flat on the cardboard. When a sheet of paper is mounted on one side of a card a similar sheet should be mounted on its back to prevent curling.

FIG. VIII.

In this little drawing Mr. Kidd has frankly unfurled his gonfalon in favor of the thatchless thatched roof. Now let the thatchless thatched roof experts look to their laurels, as we predict a brilliant future for this talented young architect.

After the paste is dry, the sketch may be colored or washed to suit the fancy, mixing a little ox gall with the colors so that they will run well and spread evenly over the fixatif. This does not take a wash quite as smoothly as Whatman's paper, and it will be found that generally the best results are obtained where very little color is used.

Merely to tint, ever so slightly, the various materials in the ghosts of their natural colors will usually be sufficient, as the effect of the pencil lines is lost if a labored or heavy wash covers them. A sure, quick, deft touch is essential, and a feeling for tint. As an architect once told a client when asked what color scheme he would recommend for a certain room, "You can't say what color to employ. Words cannot express the thought. Now I can feel just the color for that room, I should like to see it the color of an Alderney cow, for example."

Many strange and weird receipts for washes have their vogue and from each "hot one" as it is handed over, something may be learned. Here is a jim dandy, warranted not to show shakes, knots or sap, and that will not dry back on you while you chat with Madeline, the raven-haired sylphide in the office across the corridor. Ivory black, French blue, Indian yellow, burnt Sienna, and lots and lots of Chinese white. Sounds like an international alliance. Mix a tumbler full of this, varying the proportions so as to have most any desired shade, giving the drawing a preliminary wash or staining with an infusion of tobacco or coffee.

Another good preliminary stain for a drawing is equal quantities of green crème de menthe and chartreuse diluted a little with French vichy. This is good both for external and internal use.

So far we have used great restraint as regards words and phrases in a foreign language. They will crop out occasionally, however, and now it becomes absolutely necessary in speaking of "frottying," "calque a pouncé," "lavying," etc.

A "calque a pouncé" plays a very important part in the preparation of preliminary sketches and has been used many times even by people who know nothing of the French language. The explanation of the process is as follows, and does away with a French dictionary. Work over your tracing or calque until you begin to think you have got something pretty slick, and can almost hear the faint music of the spheres. Now reverse the tracing and make on a fresh sheet of thin paper a final study carefully drawn, and carried as far as you like as to detail and rendering. When this is ready, lay it face down on a smooth cardboard or stretched Whatman's paper (or equal of approved make). Pin or weight this smoothly in place and lay over it a small piece of tracing cloth shiny side up. With the left hand hold the tracing cloth firmly over a section of the drawing and "frotté" it. This means rub it swiftly and evenly with some hard, smooth metal or ivory substance. The back of a knife blade is a good thing to use; likewise a key, or large coin (if you have one), or an ivory paper cutter. If you prefer you can buy especially fashioned "frottiors" in various shapes for this purpose. Be sure to rub only with the grain on the tracing cloth, otherwise wrinkles will appear; and if too long a stroke or too hard is used, this will also wrinkle it. A little practice and the spoiling of a few choice "calques" will soon show the method. You must rub and rub and then "frotty" for a while, changing the direction, rubbing both ways, and going over the entire drawing with an equal pressure. Do not be afraid of denting or marring the finished drawing as these marks will all come out when the washes are applied or the drawing is cleaned with art gum.

FIG. IX.

A preliminary study for a church, Matthew Sullivan, architect. The original of this drawing was made on a soft warm gray paper with a slightly pebbly surface, which forms the color and texture of the cement walls of the church. There is almost no rendering on the church itself except the pencil outline and the roof, which is a deep rich ustium. The hyetal sky is well contrasted with the lycopodiales and the Pantechnicon on the left. The girandoles on either side (adapted from Delafosse) have nothing to do with the drawing. They are merely placed there not alone for their intrinsic value, but also to fill out the space.

Parenthetically it should be said that it is not necessary to make the "calque a pouncé" complete in all its details if the drawing is to be entirely inked in. One half may be drawn and, if the other side is similar, this half may be rubbed off twice ; or, if the building consists of a number of bays each like the other, a drawing of one bay may be rubbed off repeatedly if great care is exercised and fine alignment observed. Likewise parts or portions of the drawing may be made separately and transferred as soon as these sections are determined.

If the drawing is to be a large one it is sometimes well to lay out the general dimensions and axial lines with a fine-pointed pencil over which the different pieces of the "calque" may be laid for rubbing. All these various precautions are taken with the view of preserving the parthenogenesis of the final sheet of white paper, which is handled as tenderly as a mother would her sleeping babe.

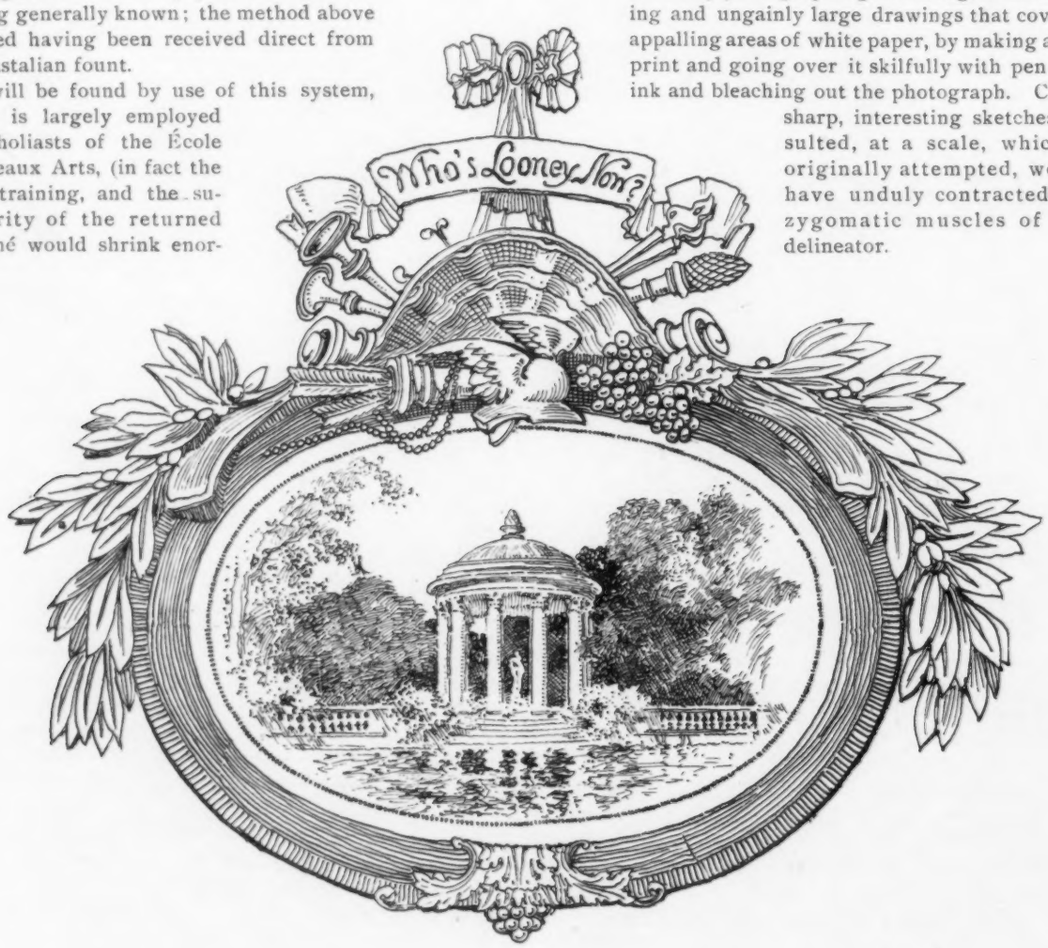
The drawing is now ready to be inked in, or, if skill and care have been used, it may be rendered directly over the transferred pencil outline. Many soft, misty, mysterious effects are obtained by washing directly over the pencil drawing without inking it in, or inking it in only in part, leaving the background or some distant portion of the building in pencil.

This method for the presentation of sketches has many advantages readily perceived, and the secret, jealously guarded for many years, is now becoming generally known; the method above outlined having been received direct from the Castalian fount.

It will be found by use of this system, which is largely employed by scholiasts of the École des Beaux Arts, (in fact the Paris training, and the superiority of the returned diplomé would shrink enormously if this part of the curriculum were omitted) that it is almost impossible sometimes, for one who is not in the secret, to understand or comprehend how in Sam Hill a drawing is rendered; and furthermore the method is just as applicable to perspectives and rough sketches as it is to carefully laid out "concours" or even working drawings. In another chapter we shall have occasion to enlarge on the possibilities of the "calque" as it is the seed from which is engendered the noble forms which are the basis of our Art. Surely here is an example of the Art which conceals Art, by some of our most eminent writers and critics regarded as the ultimate expression of the dual equation, whatever that may mean, and we feel that the value of this series (and incidentally the need to furnish the requisite number of words to fill up this page, because the illustration at the end came out smaller than anticipated) depends on the insistence of the supersubtle and the esoteric, not to put too fine a point on it.

To illustrate how numerous and varied are the methods by which drawings are evolved, we know of a case in which a small sketch hastily done on note paper in pencil was enlarged by sun-printing, touched up with wash and crayon, enlarged again, and again touched up until the final result was a stunning big drawing with all the haze and dreamy mystery of a big city "still in it."

Contrariwise many successful sketches have been produced by photographing down big, uninteresting and ungainly large drawings that covered appalling areas of white paper, by making a salt print and going over it skilfully with pen and ink and bleaching out the photograph. Crisp, sharp, interesting sketches resulted, at a scale, which if originally attempted, would have unduly contracted the zygomatic muscles of the delineator.



The Manual Training High School.—II.

BY WILLIAM B. ITTNER.

THE FRANK LOUIS SOLDAN MANUAL TRAINING HIGH SCHOOL.

THE Frank Louis Soldan Manual Training High School was built to accommodate sixteen hundred pupils in class rooms exclusive of laboratories, demonstrating rooms, shop, etc. It has forty-one class rooms, twenty-three of which are each 24 feet by 30 feet 6 inches, accommodating forty-eight pupils; and eighteen are 21 by 25 feet each accommodating thirty-five pupils. All rooms are unilaterally lighted and fitted with single pressed steel pedestal desks with sliding top.

SCIENCE ROOMS. For the study of botany there are two laboratories one of which is 29 by 40 feet and the other 24 by 44 feet, also two demonstration rooms one 23 by 21 feet and the other 23 by 29 feet. In addition to these there is a conservatory, an instructor's room, and a storeroom, all on the south side of the building.

Physiology. There are two laboratories, one 24 by 44 feet and the other 23 feet by 56 feet 2 inches, two demonstration rooms, an instructor's room, and a storeroom.

Physics. This department has two laboratories one 29 feet by 40 feet 6 inches and the other 24 by 44 feet, two demonstration rooms, and instructor's room, and a dark room.

Chemistry. There are two laboratories, one 24 by 44 feet and the other 24 by 56 feet, two demonstration rooms, an instructor's room, and a storeroom.

Physiography and Commercial Geography have one laboratory which is 30 by 40 feet, one demonstration room, and one apparatus and instructor's room.

MAIN ENTRANCE, SOLDAN HIGH SCHOOL.

The laboratories and demonstration rooms are all arranged to open en suite. Each demonstration room has thirty-two to forty-five seats with arm tablets, while all rooms are arranged for the use of the stereopticon.

SHOPS. There is a woodworking room, 30 by 68 feet, a wood turning room, 30 by 80 feet, an instructor's room, a storage room, a finishing room, a tool room, a preparation and motor room, and a wash and locker room. All of these rooms are in the south half of the one-story wing on the rear of the building.

Grouped together in the corresponding portion of the rear wing to the north are the machine shop 30 by 68 feet, the forge room 30 by 60 feet, the moulding room, 25 by 38 feet, the generating room 33 feet 6 inches by 30 feet 6 inches, the tool room, the instructor's room, and the wash and locker room.

DOMESTIC SCIENCE. Located in the south part of the ground floor of the main building are the cooking room, 25 by 32 feet with storeroom and model dining room, three sewing rooms each 24 by 28 feet with two fitting rooms all opening en suite, and a laundry 21 by 33 feet. These rooms make up the domestic science group.

DRAWING ROOMS. There are four art rooms two of which are 30 by 32 feet and two 22 by 36 feet. Each room is provided with north light through studio sky-lights and is equipped with a storeroom. The rooms open en suite and are on the third floor.

There are three mechanical drawing rooms on the third floor, two 30 by 32 feet and the other 24 by 32 feet, each arranged with top-light and storeroom.

COMMERCIAL ROOMS. There are two commercial rooms on the second floor each 30 by 32 feet, with banking office, instructor's room, and supply room.

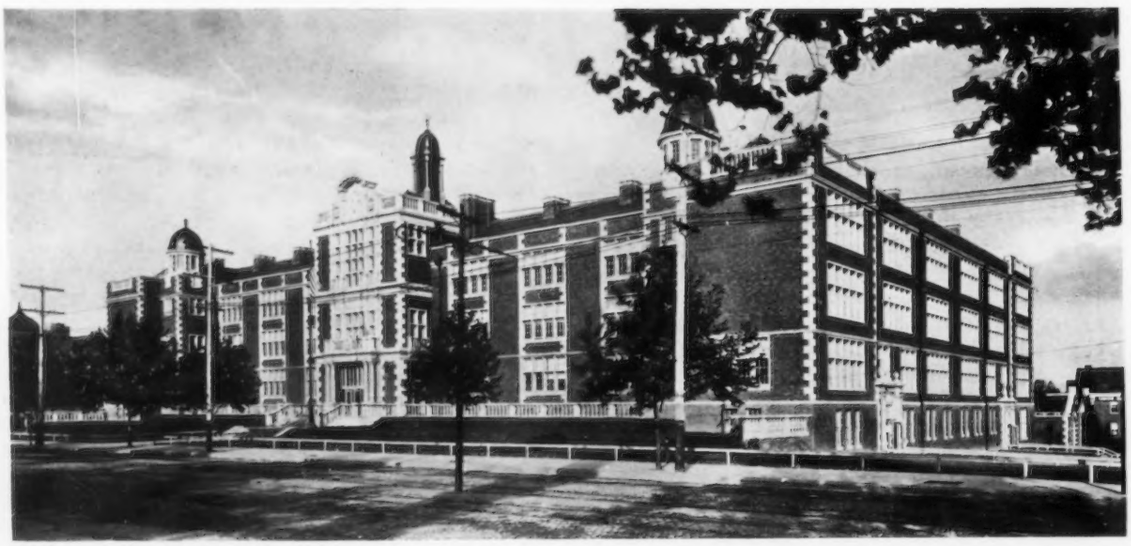
OFFICES. On the first floor just south of the main entrance are the principal's office 13 by 21 feet, the reception room 21 by 36 feet, and the business office 21 by 40 feet. A vault for school records opens from the business office.

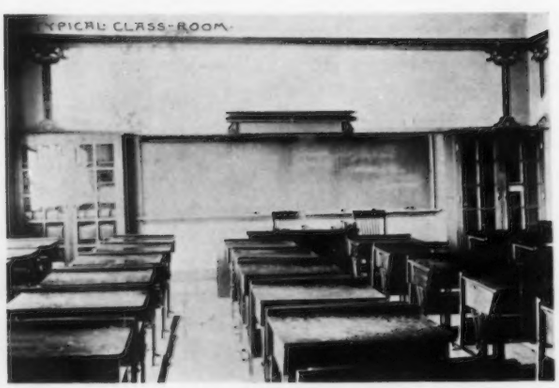
A retiring room, 21 by 26 feet, with toilet is on the first floor north of the main entrance.

AUDITORIUM. The auditorium is entered from the first floor and the balcony from the second floor corridors It has a total seating capacity of nineteen hundred and seventy. The stage is 20 by 36 feet, and has convenient dressing rooms. There are six exits on each floor, four at the west and two near the stage. These twelve exits enable the room to be vacated in less than two minutes.

LIBRARY. The library which is located over the main entrance is 36 by 35 feet and has a separate stack room, 21 by 26 feet equipped with metal book stacks.

MUSIC AND LECTURE ROOM. The music and lecture room, 36 by 54 feet, is located on the third floor, and seats two hundred and fifty. As its name implies this

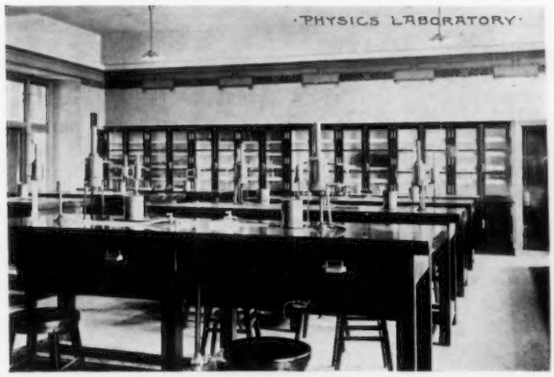


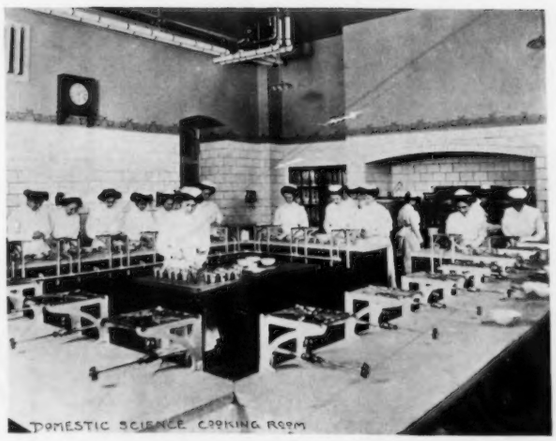


Exterior and Four Interior Views.

SOLDAN HIGH SCHOOL, CHICAGO, ILL.

William B. Ittner, Architect.





Six Interior Views.

SOLDAN HIGH SCHOOL, CHICAGO, ILL.

William B. Ittner, Architect.

room is used for lectures, singing, faculty meetings, and is a valuable adjunct to the auditorium.

Gymnasia. The boys' gymnasium, 30 by 76 feet is equipped with lockers, a toilet, four showers, and a plunge bath 14 by 20 feet. The girls' gymnasium 30 by 76 feet has lockers, a toilet, and two shower baths.

Lunch Rooms. There are two lunch rooms, each 40 by 80 feet, located under the central courts with a seating capacity for eight hundred pupils at a single lunch period. Lunches are served from a common serving room and kitchen located between the two lunch rooms.

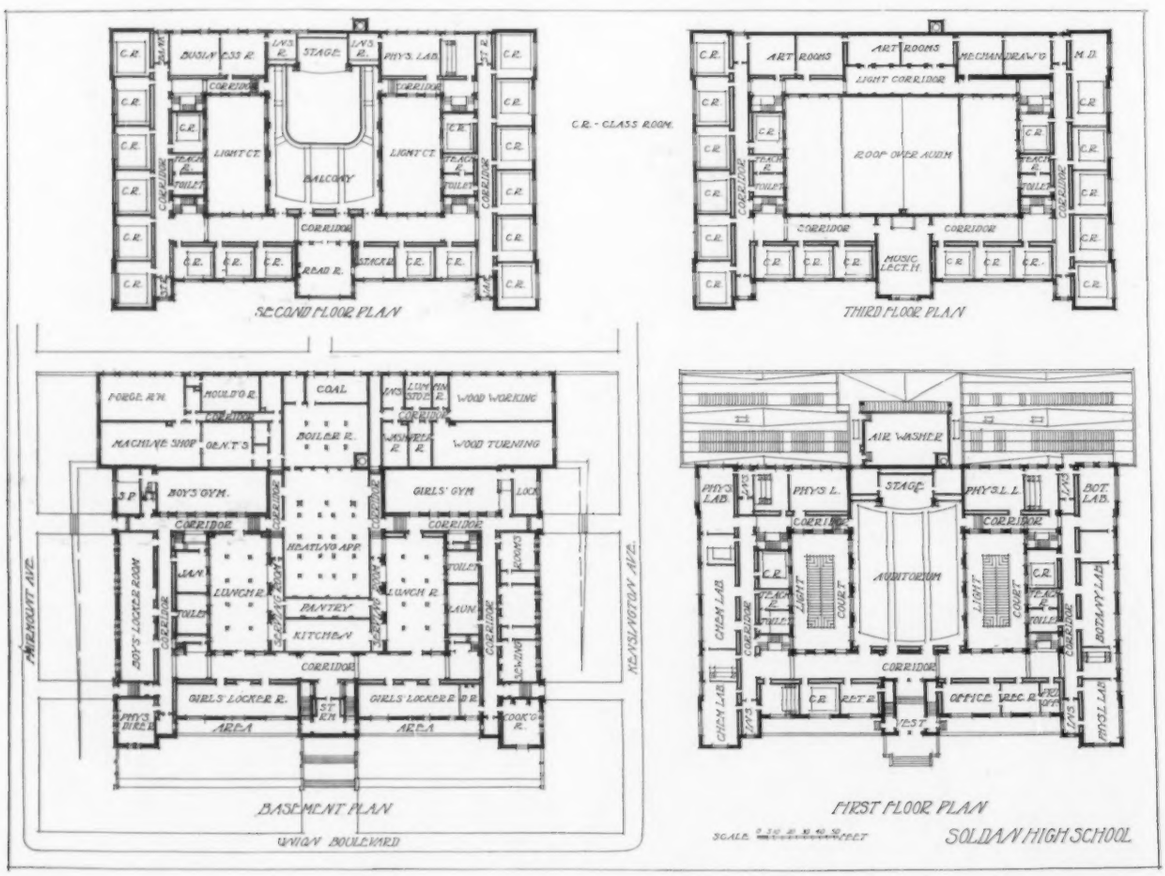
Book Rooms. Storage rooms for books are provided on the second and third floors, each 12 feet 6 inches by 21 feet. A motor driven book lift is arranged in one

Stairways. There are four well lighted stairways arranged at the angles of the building for rapid circulation.

Corridors. The main corridor is 18 feet wide while the north, south, and east corridors are 10 feet wide, all well lighted. On the third floor the art class rooms and east corridor are carried over the auditorium stage where the additional width gives opportunity for a sculpture gallery which is top-lighted.

Lockers. There are two locker rooms for girls, each 21 by 83 feet, and one for boys, 24 by 101 feet.

Heating and Ventilation. There is a mechanical system of heating and ventilation with direct indirect system of heating for the boys' shops. The boiler and coal rooms are to the rear of the auditorium on the alley,



tier of rooms accessible from one of the ground floor entrances.

Janitors' Rooms. There is one on ground floor, 21 by 24 feet, and one on the second and third floors, each 12 feet 6 inches by 21 feet.

Entrances. The main entrance fronts on Union boulevard. There are entrances on the right and left leading to girls' locker room on ground floor. There are four entrances to ground floor, two for boys from Fairmont avenue on the north and two for girls from Kensington avenue on the south. Service entrances for the shops, lunch rooms, etc., are provided in the rear of the building to the public alley.

and the air washer and tempering coils are in a room over the boilers. The fans and engines are located under the auditorium and are isolated in a manner to prevent transmission of noise and vibration. Special ventilation is provided for serving rooms and kitchen.

Cost. The school building which is of fireproof construction throughout, except the roof which is of mill construction, cost complete ready for its equipment $630,000. This gives a cost of 18.6 cents per cubic foot or $395 per pupil, estimating the per capita cost on the basis of the actual number of fixed desks in class rooms only. The equipment cost upon the same basis was $63 per capita.

The Heating and Ventilation of Churches. — I.

BY CHARLES L. HUBBARD.

THE present article, with those which are to follow, relating to the heating and ventilation of different types of buildings, has been prepared with special reference to the needs of the architect rather than of the heating engineer or contractor.

Details relating to furnace and boiler design, piping, etc., have been omitted, and matters which concern more properly the arrangement of the building itself have been considered instead. In some of the larger offices it is becoming common to employ one or more heating engineers to attend to this part of the work, while others call in outside assistance as needed to carry along the heating plans in connection with those of the architect. In the majority of offices, however, the general floor plans are pretty well completed before the heating engineer is called in, and often practically no provision has been made for the space required for different parts of the heating apparatus. Again, if space has been reserved, it is not always located where it can be used to the best advantage. The idea of the present series of articles is to give simple rules and directions, so that the architect may select his heating and ventilating system at the outset, and have in mind a general scheme to be incorporated in his plans as they are carried to completion.

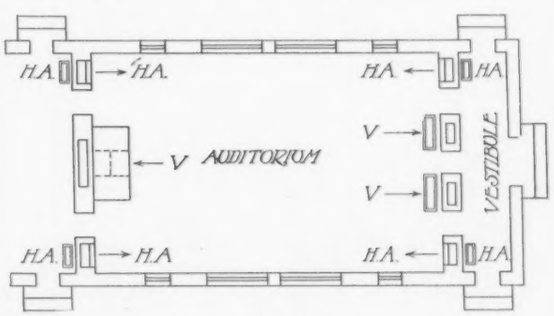


FIG. I.

It is not necessary that he be familiar with the details of heating design, but he should have a sufficient knowledge of the different kinds of apparatus used to approximate their size, and to locate them with some degree of exactness.

In treating of church ventilation, the subject will be divided into two parts, the first covering small and medium sized buildings, in which furnaces are commonly used, and the second, treating of auditoriums of larger size, employing steam heat, fans, air purifiers, and other devices not commonly found in the church of average size.

There is no distinctive line in the conditions governing the use of "hot-air" heating, so called.

Furnaces are comparatively inexpensive to install, simple in construction, and easily repaired on account of the accessibility of the different parts. They are especially adapted to churches of smaller size, where the fires are allowed to go out during the week, as there is nothing to freeze, as in the case of steam or hot water.

They are more affected by conditions of wind pressure than a system of steam heating, but are more reliable as applied to church heating than to dwelling houses, because the connections between the furnaces and the registers are shorter and more direct. From a sanitary standpoint they are, as generally installed, not up to a system of steam heating, supplying as a rule, less air at a higher temperature. A standard furnace of large size will supply, under average conditions, heat and ventilation for approximately one hundred people. From this, one can decide in any given case, the number of furnaces they wish to employ, and so be governed in their choice between furnaces and steam heat.

In general, four furnaces is about the greatest number it is convenient to care for, and in modern buildings steam is more commonly employed where more than two or three furnaces are required.

The first step in designing a system of ventilation is to determine the air supply to be provided. This, in auditoriums, which are occupied for only an hour or two at a time, and where the cubic contents is large as compared with the number of occupants, need not be as great as in theaters or even in schools.

With furnace heating very good results will be realized if a continuous air supply of 20 cubic feet per minute per occupant is provided for.

The capacity of a furnace, of standard make and design, is commonly measured by its grate area. With those of the best type there should be about 5 square feet of grate area for each one hundred occupants. If the building is especially exposed, or has an unusually large window surface, increase the grate area from five to ten per cent, depending upon local conditions. This relation between grate area and occupants is based on 15 square feet of floor space per occupant for the entire floor, and a height of 20 feet in the clear.

This is practically the same as allowing 5 square feet of grate surface for each 30,000 cubic feet of space to be warmed and ventilated.

In order to adapt the usual type of house furnace to this class of work it is generally necessary to enlarge the air passages between the furnace and the outer casing in order to provide for the increased air volume. The velocity of flow through these passages should not be over 400 feet per minute, which, with the air supply already assumed, will fix the minimum area as 5 square feet, the same as the grate surface. In practice it is a good idea to increase this about thirty per cent, if the passages are of such form as to break up the currents and bring all parts of the entering air in contact with the heating surfaces of the furnace.

The location of the furnace will depend upon the position of the warm air flues with which it is to connect, and should be so placed as to make the horizontal runs of piping as short as possible. When the furnace supplies a single flue, horizontal piping should be done away with entirely, and the furnace placed directly beneath the uptake.

The chimney is an important detail in connection with any system of heating, for without a good draft it is im-

possible to secure the desired results, regardless of how well the remaining parts of the plant may have been designed. With a chimney from 40 to 50 feet in height, the flue area should be made about 70 square inches for each 5 square feet of grate area, for round flues, and 90 square inches for rectangular flues.

The number of warm-air inlets is limited, in general, to twice the number of furnaces, as it is not advisable to supply more than two registers from a single furnace, for reasons already given.

If furnace heating is limited to churches seating four hundred people, a very good arrangement is to provide four warm-air inlets located as shown in Fig. 1, the same scheme being carried out in smaller buildings down to those of a capacity of two hundred occupants. For churches seating from one hundred to one hundred and fifty people, the arrangement shown in Fig. 2 will give very good results. In Fig. 1, a separate furnace should be placed at the base of each warm-air flue in buildings seating from three to four hundred people, while in smaller buildings, seating two hundred or less, two furnaces may be employed, each supplying two flues. If the rooms are especially long and narrow, in case of the larger buildings, it may be necessary to place an intermediate furnace at the center of the church as in Fig. 3, in which case one furnace may often be made to supply two flues at the south or least exposed end of the room, thus keeping within the limit of four furnaces. There are usually small anterooms and a small entrance at the side or rear of the pulpit which may be connected with the adjacent furnaces, as shown. The main vestibule is heated from the furnaces at the other end of the church, additional grate surface being provided for this purpose in each case. The warm air from a furnace register takes a pretty straight course to the upper part of the room, where it spreads out, and becoming mixed with the cooler air below, by diffusion, gradually settles to the lower part of the room. The occupants are warmed, therefore, by a gradual downward movement of tempered air (about 70 degrees) from above, rather than by direct contact with comparatively hot currents from the inlet registers. This is why as good results may be obtained from two to four inlets, delivering the air through wall registers, as shown in Figs. 1 and 2, as by the use of a greater number of floor registers from which it rises almost directly to the ceiling, and warming but a comparatively small zone in its transit. With the arrangement of inlets and outlets in Fig. 1, the movement of the air is approximately as shown in Fig. 4. This will be affected to some extent by local conditions, such as the opening and closing of doors, exposed glass area and leakage around windows, direction and force of the wind, etc.

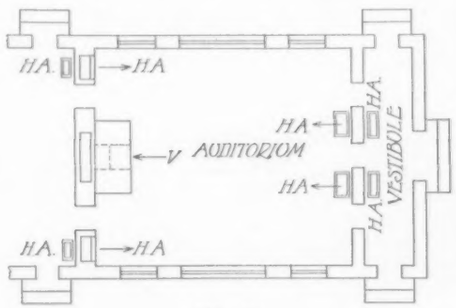


FIG. II.

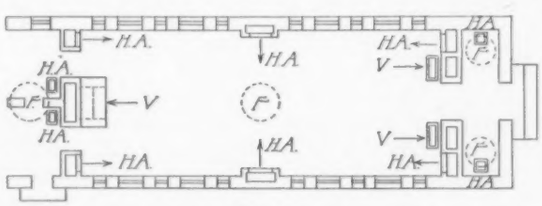


FIG. III.

In general, however, it indicates what takes place to a greater or lesser degree, and shows the reason for adopting this particular arrangement of flues. In Fig. 2, the greater part of the warm-air supply for ventilation is furnished through the wall registers at each side of the pulpit, the vent registers being placed in front of the platform as before. This system is simply one-half that shown in Fig. 1, being made possible by the smaller size of the room. The small furnace, at the entrance end of the building, is for warming the main vestibule, and also for furnishing a certain amount of additional warm air at that end of the room. The general movement of the air currents in this case is shown in Fig. 5. The inlet registers, in the examples given, have been placed in the wall, some 7 or 8 feet above the floor, while the vent registers are in the floor.

Those at the pulpit end of the church may often be worked into the front of the platform, grilles of wood or bronze, or even painted cast-iron, replacing a certain number of panels without producing an unsightly effect.

Another detail, frequently overlooked, is a ceiling vent of generous proportions, to be used in warm weather and at such other times as it may be desirable to change the air of the room quickly or reduce its temperature. This vent should be controlled by means of a damper, operated by a chain from some convenient point outside the auditorium. It should only be used at such times as have been mentioned, on account of the resulting waste of heat. The general ventilation should at all times be through openings at, or near, the floor level. In order to produce sufficient draft in the vent flues in mild or damp weather, and to start a circulation in cold weather, "stack heaters," so called, should be provided. These are simply small cylindrical stoves with an extended mouthpiece, so that coal can be supplied from outside of the flue. The amount of heat required for warming the flues will depend upon various conditions, such as height and size of flue, outside and inside temperatures, etc. For average conditions, satisfactory results are usually obtained by making the total grate area in the flue heaters about one-seventh that of the total grate area of the furnaces. The location of the flue heater, for the best results, is shown later. The size and construction of the flues are matters of especial importance to the architect. The sectional area is based on the velocity of air flow, which, in general, with the arrangements shown, may be taken as about 300 feet per minute in both supply and vent flues. In the former, the temperature will be greater, and the height of the flue less, so that the air velocity, which depends on these two conditions, will be approximately the same in each. If an air supply of 20 cubic feet per minute per occupant

is assumed, there should be a total flue area of $\frac{20 \times 100}{300} = 6.6$ square feet for each one hundred occupants, which applies to both supply and vent. This, in practice, is commonly taken as 7 or 8 square feet, usually the latter, to allow for the low velocity which it is possible to obtain in mild weather, and the comparatively low temperature of the air passing into the room under these conditions. The flue construction will depend somewhat upon the general character of the building. When of fireproof construction, they are commonly made of tile or brick, or of wire lath and plaster, care being taken in either case to make them tight against air leakage, and of smooth interior finish. With wooden construction, the flues are commonly of galvanized iron, furred in with a lath and plaster finish. The vent flues are sometimes of brick, even in wooden buildings, and it is a good idea to use this material for the lower part of the flue to a point somewhat above the heater, as a protection against fire. Both brick and galvanized iron vent flues should be carried well above the roof and provided with a suitable hood, which must of course harmonize with other architectural features of the building. Sometimes these flues can be made to discharge into an open tower with good results, thus concealing them from view. A suitable arrangement for an adequate cold air supply is an important detail not always given the consideration which it should receive on the part of the architect.

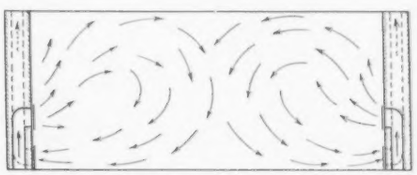


FIG. IV.

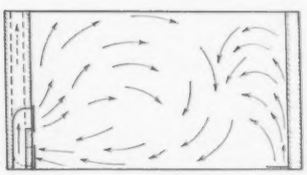


FIG. V.

Each furnace should have a connection with the outside air of at least 6 square feet for each 5 square feet of grate surface, and it is usually best to make it the full size of the warm-air flue (7 or 8 square feet) when conditions will allow. The cold-air duct should, if possible, open toward the north or west, in order to get the benefit of the wind pressure. A better plan is to provide cold-air rooms as shown in Fig. 6, and arrange for inlet windows on three sides. This gives an opportunity to take advantage of the wind from three points of the compass instead of one, and the effectiveness can be still further increased by providing outside shutters which can be used for deflectors, as shown in Fig. 7.

The inlet windows should be provided with means for adjusting, to meet the requirements of different conditions of wind pressure and direction.

Temperature regulation, to a certain extent, can be secured by properly controlling the fire, but every furnace layout should also be provided with mixing dampers for close regulation and when it is desired to secure results more quickly than can be done by changes in the fire.

The form and details of construction will depend on local conditions, but the general principle to be followed is shown in diagram in Fig. 8. They should be made to close tightly against angle iron flanges, and be under the control of the janitor from some point outside the auditorium. In designing the mixing dampers, care should be taken to have the cool air pass up the back of the flue and enter the room at the top of the register above the warm-air current, else it will fall after entering the room, and cause uncomfortable drafts upon those sitting below. When introduced at the top of the register, the warm air from below mixes with it and tends to carry it upward as shown in Fig. 9.

It will be noticed that only the auditorium has been provided for in the above. This has been done purposely because the location of chapel, Sunday school rooms, etc., vary so widely in different cases. These may be treated as a separate proposition, bearing in mind that the full ventilating power of the system is not required in the main auditorium during the hour following the service, and at least one-half the capacity of the main furnaces may be diverted to the warming of other parts of the building. When the arrangement allows, it is often possible to do the whole of the heating from the auditorium furnaces by the use of suitable switch dampers.

Another detail to be cared for by the architect is provision for air rotation when warming only is cared for, without ventilation. This applies to the time required for heating up the building on Sunday morning, and at any time during the week when it is desired to warm the church for cleaning, or for other purposes, when only a few people are present.

Rotation consists in taking inside air from the room

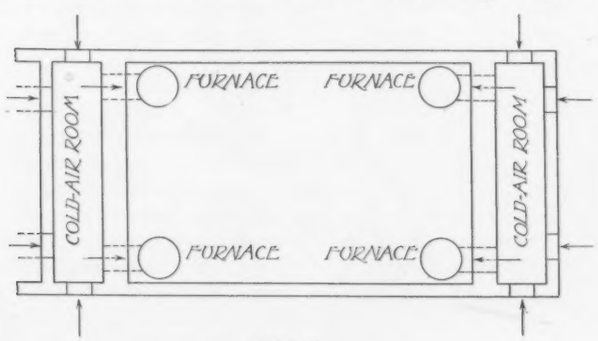


FIG. VI.

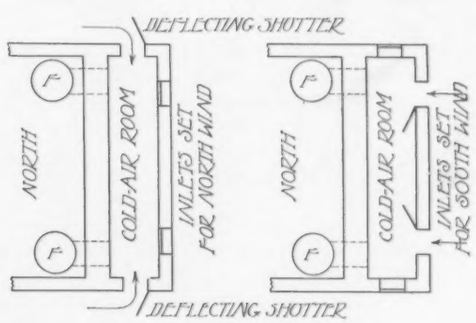


FIG. VII.

and passing it through the heating chambers of the furnace instead of drawing in cold fresh air from out of doors. Under these conditions the air is used over and over again, and is simply a medium for carrying the heat from the furnace to the room, the same as the circulating water in a system of hot-water heating. When the basement is finished, or has a cemented floor and is kept reasonably clean, rotation can usually be secured by opening, or partially opening, the various doors between the auditorium and the cold-air rooms connecting with the furnaces, the cold-air inlet windows of course being closed. Often all that is necessary is to open the doors between the cold-air rooms and the basement, depending on leakage to furnish a sufficient amount of air to carry the heat from the furnace to the room above.

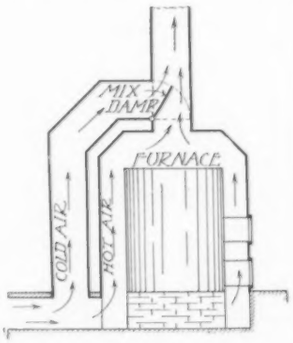


FIG. VIII.

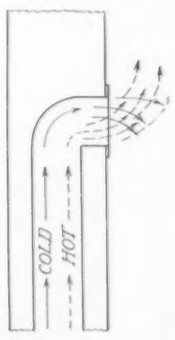


FIG. IX.

When conditions are such that it is necessary to provide special ducts for this purpose it can often be done by placing dampers in the vent flues above the stack heaters and connecting the lower part of the flues with the cold-air chambers, thus making the vent registers serve two purposes. Fig. 10 shows a common arrangement of vent register, stack heater, and outboard flue; while Fig. 11 shows the same provided with a switch damper for sending the air from the vent register either outboard or to the cold-air room.

In planning for a heating and ventilating system for a church auditorium, a convenient method is to assume one hundred occupants as a basis, or "unit," and proportion the different parts of the apparatus according to the data given in Table I. In this way the size is easily approximated for the conditions in any particular case, and space may be reserved in laying out the plans; while the location of flues and registers may be determined, in a general way, by reference to Figs. 1, 2 and 3.

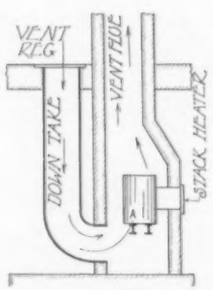


FIG. X.

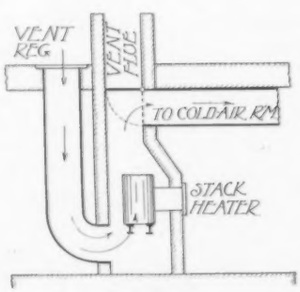


FIG. XI.

TABLE I.

PROPORTIONS OF FURNACE HEATING APPARATUS FOR ONE HUNDRED OCCUPANTS, OUTSIDE TEMPERATURE 0.

Air supply per minute, 2,000 cubic feet.
Grate area of furnace, 5 square feet (30 inches diameter).
Air passages through furnace, 6 to 7 square feet.
Grate area of stack heater, 0.78 square feet (12 inches diameter).
Chimney flue, 40 to 50 feet high, 70 square inches for round flue (10 inches diameter), 90 square inches for rectangular flue (8 inches by 12 inches).
Supply and vent flues, 8 square feet.
Cold air duct, 7 to 8 square feet.

This data is for average conditions; for especially exposed locations, increase furnace grate area from five to ten per cent, or even more, all other dimensions remaining the same as in Table I.

It should be stated that the diagrams accompanying this article are for illustrating principles rather than details of construction, and are for the purpose of suggesting schemes which may be carried out, in part at least, in actual design.

Various modifications will, of course be necessary to adapt them to special cases. For example, a different arrangement of doors from the vestibule into the main auditorium in Fig. 1, or other structural details, may make it impossible to carry up the vent flues where shown, but it may be perfectly feasible to obtain the same result by changing the uptakes to some other point, not too far distant, and connect them with the vent registers by means of horizontal ducts in the basement. In cases of this kind the added resistance should be provided for by making the horizontal portion from twenty-five to thirty per cent larger than the vertical, as computed by the methods already given. It may also be well in cases of this kind to increase the size of stack heater slightly.

Again, conditions may be such that the warm-air flues cannot be brought up at the sides of the platform as shown, and it may be necessary to approximate this arrangement by locating them somewhat further back, and connect with the registers by horizontal ducts at the ceilings of the small rooms in the rear. When this is done, the horizontal portions should be enlarged, as already described, and the change in direction from vertical to horizontal should be well rounded to minimize the resistance.

When it is not possible to utilize the full width of the basement for a cold-air room, as shown in Fig. 7, practically the same results may be obtained by using a small room in each corner and connecting them by an overhead duct of galvanized iron.

In some cases it will be found impossible to provide more than a single inlet for certain stacks, that is, the air must always be taken from the same point of compass. When this is necessary the opening should be made about 50 per cent larger than called for by the methods previously given. If inlets of this kind occur upon the south side of the building it will improve matters somewhat if a swinging deflector is provided, which may be set to catch winds coming either from the east or west.

These illustrations are cited to show how the suggestions given may be altered to adapt them to the special conditions of actual practice.

The Principles of Architecture.—II.

BY WILLIAM L. MOWLL.

THE BEGINNINGS OF LIFE.

THE simplest of the minor forms of architecture are the mouldings. A good common example of the use of these forms is the cornice, usually made up of a group of mouldings. Even a slight examination of the tops of the walls of the buildings in any city will include a great variety of cornices above walls of all sorts of materials. Because of a desire to state freshly the motives which prompt designers to produce so many different answers to what appears to be always pretty much the same problem, it is proposed to look back at the beginnings of architecture to see how this art became distinguishable from building and what part cornices and mouldings in general had in that genesis. Inspired from Egypt, the Greeks created architecture of a nobility and power to equal which their successors have expended their best efforts in vain. The union of structural design with that branch of design which deals with the pleasant relations of spots, lines, areas and colors, without taking into account any more difficult questions, marked its origin as it has each of its revivals. It seems possible with the aid of this pure or inorganic design to find out why the great variety of forms used in past architectures were used and to get the answer to this question in such form as to be a constant guide to the designer.

FIG. I.

By common agreement the older and simpler of Egyptian structures are not architecture but building, merely. An example of this sort is the temple at Amada (Fig. I). It has walls and piers of regular rectangular blocks supporting the flat rectangular slabs which form the roof. The actual necessities of putting the building together have apparently, with but slight exceptions, caused every form to take its shape and position. The reasons for the features not strictly structural are not apparent. The builders were evidently so fully taken up with the construction itself as to prevent their adding details that were not absolutely necessary. Design was not yet clearly apparent.

FIG. II.

Examples of this degree of simplicity are rare. Nearly every ancient building in Egypt has that something which makes it architecture. For instance, in the temple at Deir-el-Bahari (Fig. II), a change from the earlier type has taken place without any modification in the manner of building. The plain rectangular piers have given way to columns with numerous flat sides. Instead of being of the same shape from the bottom to the underside of the cross beam, these have square blocks placed at their upper ends just below the architrave.

What was the object of making these piers with a larger number of flat sides than four and of placing the square block at the top? The pier at Amada was quite as effective as a practical means of support. The answer begins to be evident if a number of columns are arranged as in the diagram (Fig. III). The eye naturally follows this succession of forms in one direction rather than the other. This happens on account of the greater degree of contrast, caused by the block at one end of each unit, unbalanced by any attraction at the other end. The vision is directed incessantly about, up and down, right and left. The attention is held by symmetry. The eye moves freely where not so held. In this unbalanced arrangement it moves more readily in the direction of the superior interest, assisted by the parallel lines of the shaft. In the building, the arrangement has the effect of producing a suggestion of impulse upward.

The mouldings upon the portion above the vertical supports, here, as at Amada, where a beam spans from post to post, help this suggested movement. There is more going on at the top edge of the architrave and along the upper part of the cornice, producing together more interest in the upper part of the whole entablature, than at the bottom. The result is an unbalance. Its effect on the eye may be shown in a diagram as in the case of the column (Fig. IV). The eye is impelled through the arrangement to the left. This demonstrates that inequality of contrasts is productive of a feeling of unbalance, unrest or movement, in whatever direction it occurs. This movement may be along lines or across them as the designer pleases.

If the Parthenon, (Fig. V), is compared with the Egyptian temples, the system of construction is seen to be the same, the forms of the details very different. The columns are less ponderous and more graceful. The contrasts of form of the capitals are so arranged as to be more striking than the simple ones already

shown. The movement toward them is helped by two means used in Egypt, that is, parallel lines and a diminution in size from bottom to top. Beside this, the upper portion of the whole arrangement contains a larger number and variety of contrasts of forms than in the Egyptian temple. The entablature is increased in relative height by the addition between the architrave and the cornice of the frieze, the surface of which is subdivided and variously carved and decorated. The top level line of the cornice is unbroken as in the previous example. There is less abruptness and severity in the Parthenon and more or better, style. The motive remains the same, a liveliness given by the use of unbalanced parts but it has received expression with greater clearness, ease and force. The difference is one of manner of expression only. The reasons for the increase in interest are to be found in the form and arrangement of the detail from a general examination of which the underlying principle again appears.

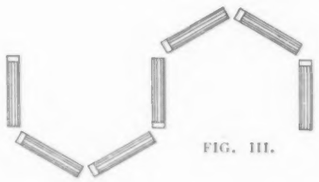


FIG. III.

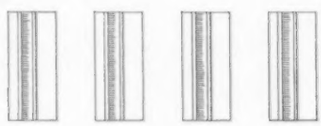


FIG. IV.

At the level of the colonnade the eye moves with difficulty across the vertical lines of the columns but moves freely upward. The shapes of the columns and of the spaces between them, balanced about vertical axes, interfere with a horizontal movement of the eye by presenting symmetrical, upright shapes. The eye falls naturally on the middle of the row of symmetrical objects which are presented at this level. Then, as the columns are more interesting at the top, the eye moves up along the columns into the region of the entablature.

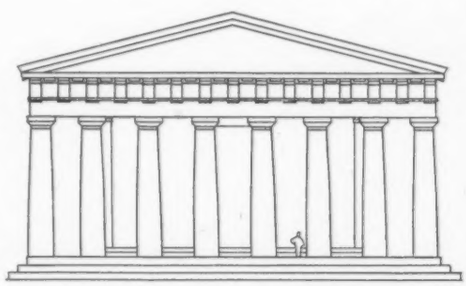


FIG. V.

Impelled by the columns and attracted by the frieze, the eye moves, without anything to arrest it, across the plain band of the architrave into the region of the frieze. Taken together with the triglyphs the metopes form a band along which the eye finds it possible to move horizontally with much less balance to hold it than below. A horizontal movement is more or less arrested by the vertical lines of the triglyphs which give an upward impulse. This is not powerful however, because their vertical extent is slight. The effect of symmetry, holding the eye at the center of the whole and retarding its freedom of movement is no longer felt because the number of parts in the arrangement has been increased beyond seven, which is the greatest number that is recognized as a symmetry.

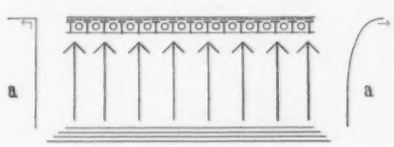


FIG. VI.

Above this band, the upward movement is terminated. There is a further transition however, from the frieze to the cornice line, a set of flat brackets placed upon the under side of the cornice. The balance or unbalance of the lines and parts of the whole is shown by the balanced and unbalanced lines in the diagram (Fig. VI), which reveals the inorganic design which has been added to the bare construction.

In the temple at Deir-el-Bahari movement is present clearly, in the Parthenon it is not only present but is guided and governed. The coincidence between the movement and the actual structural conditions is complete. The vertical continuity of the columns and the unbroken horizontal continuity of the architrave are not only suited to the post and beam but are so arranged as to show what they are doing. The upper edge of the architrave is marked as in Egypt by a horizontal line. Its extent from one post to the next, and its rigidity for carrying the load which it supports are thus emphasized as much as they could be without suddenly interrupting the vertical movement suggested by the column. The two variations of this scheme of upward unbalance or movement may be represented by the lines at (a) in the figures. The Egyptian was abrupt in "stopping" the unbalance, the Greek gradual. The frieze was introduced for no structural reason but to form a step between the vertical unbalance of the column and the complete horizontal of the cornice.

This scheme of movement which has been shown in its origin and its later use in Greece is only one out of the past. The common elements are the life and the pure design idea. The former resides in the construction itself. The old adage "The arch never sleeps" is no less true of the lintel. The law of gravitation keeps all the forces of any building in constant operation. Their action and the resistance to them was felt by the ancien builders to make a theme for their frozen music. The expression of the action of the parts by means of parts added to bring out continuity, balance and unbalance, gives the appearance of movement and life to that which before acted but without witness. In testifying to the forces and reactions of their structures and of the purposes which caused their erection, arose opportunities for the unconscious record of the temper of the builders, through whom flowed into the stones their strength and weakness, aspirations and successes. This is the life of building; it thus becomes architecture.

The life of modern architecture depends similarly on the structure and its expression. Success in expression depends on an orderly use of balance and unbalance; never forgetting that another of the differences between Egypt and Greece was that the Greeks were possessed of a superior sense of beauty.

FORTY-FOURTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

SAN FRANCISCO, the "Paris of America," extended a most cordial welcome to the A. I. A. Convention held in that city January 17, 18 and 19. This was the first meeting of the Institute to be held on the Pacific Coast and will ever be a memorable one because of the hospitable treatment its members received from their Western confrères, the citizens at large and the public press. The breadth and scope of work undertaken by the Institute was never more fully realized. A vital grasp of our present needs together with the furtherance of such acts as will bring the profession added respect and dignity seemed to permeate each address, each report and each discussion. The large attendance suggests a growing interest that speaks well for future achievements.

The first session of the convention was auspiciously opened at the Fairmont Hotel on the morning of January 17th with addresses of welcome by acting Mayor John A. Kelly and M. H. Robbins, Jr., president of Merchants' Association. Irving K. Pond, president of the A. I. A., in responding, touched on certain of the Institute's relations to the building public as represented by the client; the Institute's attitude as affecting the profession; and the family relations within the Institute. After speaking of the ever-widening circle of influence exerted by the Institute Mr. Pond said: "I touch firstly upon that phase which embraces the Institute's relation to the client. It is the province of the Institute to deal broadly and in detail with the principles underlying the science of building and the ideals underlying the art of design.

"The first great principle upon which the Institute stands is that of justness and fairness in so far as it is given to man to realize these seeming abstractions. In the Code of Ethics, in the Competition Code, in the cognizance it takes of all professional activities, the Institute stands for fair play as between man and man, absolute frankness and fairness of dealing between architects in their professional relations, absolute integrity and fairness in the dealings between architect and client and between client and architect."

After citing the two codes mentioned above, Mr. Pond discussed the matter of accepting the Institute's schedule of charges. He showed how a discrimination should be made between buildings which are merely of structural import and those which call into play all of the material and æsthetic capabilities of the architect.

Referring to the Institute's attitude as affecting the profession Mr. Pond quoted the Board of Directors as reaffirming the belief that the American Institute of Architects is and should continue to be the foremost professional body in the United States. To accomplish this the Board unanimously decided to consider outside of the honorary class no membership which was not purely architectural; while the honorary class should include non-professional men who have with distinction ministered to the art of architecture and such practitioners of sculpture and painting as have demonstrated their fitness to enjoy the privilege. He closed this thought by saying, "I feel that in passing these amendments virtually as recommended by the Board the Institute will strengthen itself within itself and before the public."

In closing Mr. Pond spoke of the paramount ideal of architecture, *the ideal of beauty:* "It must sway in the relations between architect and client, it must color the fraternal intercourse between architects, it must govern in the realm of education."

Reports were read from the Board of Directors and various committees. The directors' report showed a membership of one thousand and eighty-four, as follows: Fellows, three hundred and eleven; associates, six hundred and fifteen; honorary, seventy-two; corresponding members, eighty-six.

The Committee on Education reported through Ralph Adams Cram their plan of a consistent scheme for architectural education. Its aim is "to round out the fine work now being done in drawing and design by such organizations as the Beaux-Arts Society, the Philadelphia T-Square Club and the Boston Architectural Club by equally authoritative training in history, mathematics and construction which has been the object of the committee of this year."

Mr. Cram spoke of the enthusiasm with which the scheme has been accepted at Columbia University; of the extension courses established at the University of Pennsylvania, which work is carried on in consultation with the local Chapter and the T-Square Club; of its success in Boston, and the cordial sympathy of institutions like Harvard, Technology and others.

Mr. Cram condemned the idea of the membership being limited to the eminent architects of mature years. He believes in catching the young student whose close contact with the Institute will make his membership therein inevitable when he comes to the practice of architecture.

In conclusion Mr. Cram emphasized the keynote of the report: "The solidarity of the architectural profession, architects, draftsmen and students; and the raising of the Institute itself to a point where it will command, where now it only deserves, universal recognition as the authoritative and definitive expression of the architectural profession in the United States."

The report of the Committee on the Conservation of National Resources showed the wide and increasingly active interest in this subject and explained how the continued prosperity of the building interests is dependent upon the wise use of the constructional materials.

The report of the Committee on Competitions by Frank Miles Day caused considerable discussion throughout the remaining sessions. He said: "The Institute in its canons of ethics declares that it is unprofessional conduct for any member to take part in any competition, the terms of which are not in harmony with the principles approved by the Institute. In consonance with the canon and as a means of applying it in practice, the Institute at its Forty-third Annual Convention resolved that it should be held unprofessional for any member to take part in any competition, the program of which had not received the formal approval of the Institute. It, therefore, became necessary for the Board of Directors accurately to state the Institute's principles. The statement of them took the form of a circular of advice relative to the conduct of competitions and a code stating the provisions regarded by the Institute as essential to every program."

The code provides that members of the Institute may not enter their plans in competition unless certain rules are observed, such as the employment of an expert adviser to set forth the type of plans desired, the acceptance of a minimum rate, etc.

Mr. Day in answering the many objections as to the mandatory features of the code said: "The committee is of the opinion that the action of the last convention has been of the highest value to the profession; that the circular of advice has greatly diffused a knowledge of the proper way of holding competitions and that the mandatory character of the code has in a few months brought about such an improvement in the conduct of its members as no academic discussion or statement of principles could have brought about in years. The committee is unanimous that the Institute's attitude and the code itself were sound and right and that the only changes needed were of procedure and detail."

Other committees reported as follows: "House Committee," Leon E. Dessez; "Bureau of Fine Arts," S. B. P. Trowbridge; "Institute Seal," H. Van B. Magonigle; "Electrical Code and Fire Protection," C. H. Blackall.

During the afternoon the delegates enjoyed the boundless hospitality of the members of the San Francisco Chapter. After a profitable sightseeing tour of the city luncheon was served at the Cliff House. In the evening a reception was given in the Fairmont Hotel by the local Chapter. Amid the expressions of praise for the cordiality shown to the visiting members a telegram was received and read from President Taft. In his message to the architects in convention President Taft extended his felicitations and congratulations for the great work the Institute has done.

The second day's session was called to order by President Pond. Considerable time was spent in the discussion of the report on competitions as well as on the proposed amendments to the by-laws and constitution. The code of competitions as recommended, opposing competition and favoring direct employment, was adopted.

Under the reports of committees, H. B. Wheelock, on the Committee of Credentials reported fifty-seven delegates present in person and thirty-five by proxy, making a voting power of ninety-two. C. Grant La Farge, chairman of the Committee on the President's Address, reported a general concurrence in the president's views and proposed amendments. C. A. Ziegler, vice-chairman of the Committee on Chapters, reported unusual activity among the majority of the Chapters. After showing how the Chapters in various cities had done much good in acting as experts in municipal and other work, he offered in behalf of the committee the recommendation that all Chapters of the Institute be urged to appoint committees for the "Preservation of Historic Buildings." D. Everett Waid, of the Committee on Resolutions, made a report indorsing a resolution by the San Francisco Chapter which recommends the appointment of a municipal commission for the developing of plans for public improvements on generally harmonious lines. Robert D. Kohn, of the Committee on Reports of Special Committees, recommended the continuation of the Committee on Conservation, and the establishment of a Committee on Fire Protection, to work with the National Fire Association.

Following the business meeting of the morning the architects became the guests of the Oakland Chamber of Commerce. The representatives of the Oakland organization met the delegates at Key Route Inn where luncheon was served. A. A. Denison, secretary of the Chamber of Commerce, welcomed the architects in the name of the city of Oakland. Following the luncheon the delegates were taken in automobiles about Oakland, after which the Institute assembled in the Greek Theater of the University of California. A hearty welcome was extended to the visiting architects by the president of the State University.

The third day's session was called to order by President Pond at 10 A.M. Wednesday, January 19th.

After considerable discussion the following amendment was adopted together with many others: "No person shall be eligible to membership in the Institute unless he be at the time a member of a Chapter, provided that a Chapter exists in the territory in which he resides. No member of the Institute shall be an Institute member of more than one Chapter." A resolution was passed to devise means for the preservation and restoration of the ancient Franciscan buildings of California. A motion was carried to establish a Committee on Civic Design.

At the afternoon session J. Pickering Putnam of Boston presented a paper on "Plumbing." After the reading of this paper the report of the tellers announced the following elections: Irving K. Pond, president; Walter Cook, first vice-president; E. M. Wheelwright, second vice-president; Glenn Brown, secretary and treasurer; Thomas R. Kimball, Milton B. Medary, Jr., and A. F. Rosenheim, directors for three years. Sixteen architects were elected Fellows of the Institute. Following the announcement of the tellers Arthur B. Benton read a paper on "The Missions of Old California."

In the closing moments of the convention resolutions were adopted giving thanks to the Illinois, Colorado, San Francisco and Southern California Chapters, who have and who will entertain the Institute in its present excursion and convention. The recommendation of the Board of Directors that a gold medal of the American Institute of Architects be conferred upon George B. Post was passed. After a few remarks by the various members the convention adjourned with three rousing cheers for the San Francisco Chapter.

The banquet tendered at the Fairmont Hotel Thursday evening by the San Francisco Chapter to the visiting delegates concluded the entertainment extended by their California hosts. William Mooser, president of the San Francisco Chapter, extended a most cordial greeting to the delegates.

In response to a toast C. Grant La Farge of New York said: "There is something of singular inspiration to a man of our older and, perhaps, more limited eastern communities, in coming thus across the vast distance of our great country — miles which separate us geographically and yet are but a long and splendid link in our essential brotherhood." Other speakers of the evening, who paid a tribute to the genius of the modern American architect, were Right Rev. William Ford Nichols, D.D.; Irving K. Pond, president of the Institute; Ralph Adams Cram; Frank D. Hudson; Prof. C. B. Wing; Charles W. Hornick, and Frank T. Shea.

Plate Illustrations—Description.

GRACE HALL AND DORMITORIES, WILLIAMSTOWN, MASS. PLATES 15–19. This group of buildings will consist of a large hall and two dormitories. Grace Hall, which is given as a memorial by Mr. Alfred C. Chapin, will have an approach from the south by an avenue 100 feet wide with tall elms growing on either side. The exterior design calls for a colonnade of six monolithic columns crowned by a pediment whose tympanum will accommodate a future work of statuary. The building will have a granite base, walls of dark red sand struck brick, and cornice and balustrade of stone. All entrances will have carved stone doorways, three of which constituting the main entrance will be richly carved and have ornamented wood doors. The windows on the sides and front will have moulded and carved stone treatment. Upon the interior the walls of the lobby will be treated in quarter sawed oak and the ceiling in ornamented plaster. The stair halls will have paneled walls and ornamented ceilings in plaster. The auditorium will be designed in quarter sawed oak to the top of the gallery balustrades, above which will be ornamented and paneled plaster. The benches at the sides of the auditorium will also be of quarter sawed oak, having a parapet of the same material in front of them with panels ornamented and pierced. The floor will have wide teak wood strips alternating with narrow ones of rosewood. The soffit of the gallery will be of paneled wood and the wainscot of wood painted white. The ceiling of the auditorium will be painted in two tones of gray. Two trap doors are planned for the removal of the seats to a basement storage room. The stage will have quarter sawed oak on the walls to the top of the cornice; teak wood floors in fancy pattern, and an oriental tapestry filling a large panel. The president's room will have a wood wainscot, wood mantel with marble facing, plaster paneled walls and ornamented ceiling. The organ will be directly over the north end of the stage and installed so that the music will come partly from an opening back of the stage and partly from pierced grilles over the proscenium lintel. There will be a large club room in the basement directly under the stage which will have a wainscot of paneled wood and a plaster treatment above.

GYMNASIUM, MOUNT HERMON, MASS. PLATE 20. This building is built of Harvard brick with dressed basement walls and Vermont marble trimmings. The main cornice is of wood, the roof of slate and the cupola of copper. Upon the interior the walls are faced with light colored brick. The main gymnasium is 50 feet by 120 feet with the running track suspended from roof trusses. The total cost of the building with the electric fixtures, but exclusive of gymnasium apparatus, lockers and other furnishings, was approximately $79,000. The cubage of the building taken from finished cellar floor to surfaces of roofs, is 350,000 cubic feet, making the cost per cubic foot about 22½ cents.

CENTRAL Y. W. C. A. BUILDING, PITTSBURG, PA. PLATES 26, 27. This building has an exterior finish of light colored brick with terra cotta trimmings. The main feature on the interior is the lobby which opens to the top of the second floor, has a mosaic tile floor, and a balcony running around the sides. The woodwork in the lobby is of fumed oak, as it is throughout the building. The basement plan provides for a swimming pool, dressing rooms, baths, laundry and an emergency room; while a sub-basement takes care of the heating, ventilating and electrical apparatus, a pumping station, a refrigerating plant and filter. The second floor accommodates a library, an extension department, offices, class rooms, and a designing room; while the third floor is occupied by the domestic art and domestic science departments. Over the sixth floor are located single rooms for the help. A roof terrace is placed above the dining room, and connected with the kitchen by elevators in order to furnish meals there in the summer. In addition to the regular fire escape there is a fire tower, separate from the main building but accessible from every floor. The total cost of the building, including architect's commission was $310,000. The general contract amounted to $176,000; the mechanical equipment including plumbing, heating, lighting and power plant, $72,000; the balance being used for wrecking, structural steel, kitchen and laundry equipment, refrigerators, light fixtures and miscellaneous items.

Editorial Comment and Miscellany.

THE CONVENTION.

THE convention of the Institute held in San Francisco in January, 1911, differentiates itself from all other recent conventions in that, by the very nature of the case, it was primarily an affair of good-fellowship. This element has never been lacking in the past, but hitherto, for one reason and another, legislation has been to the fore and the conventions, particularly those in Washington, have been marked more by consistent hard work than by social considerations. The San Francisco Convention inevitably took on a different color, and it was well for the Institute that it did so. Important as are legislation and the listening to scholarly papers, the fusing of the whole profession into one through the meeting on a common ground of representatives from far separated and widely different communities is of quite equal importance — as has always been realized by those who in Cleveland, Chicago and Washington, have annually come into touch with their fellows from the South, the Middle West and the Coast. Every man from every Chapter brings to each convention something that every other member needs, and no section of the country—considering its geographical distance—has been more faithful in its attendance, and at great personal inconvenience and expense, or more generous in

its contribution of valuable personality, than has the Pacific Coast.

It was only justice, therefore, that at last the mountain should go to Mahomet, and that the Coast should for once be host at its own hearthstone, rather than guest at the far-away board of the East.

DETAILS OF FACTORY BUILDING, NEW YORK CITY.
Executed by the South Amboy Terra Cotta Company.
Shire & Kaufman, Architects.

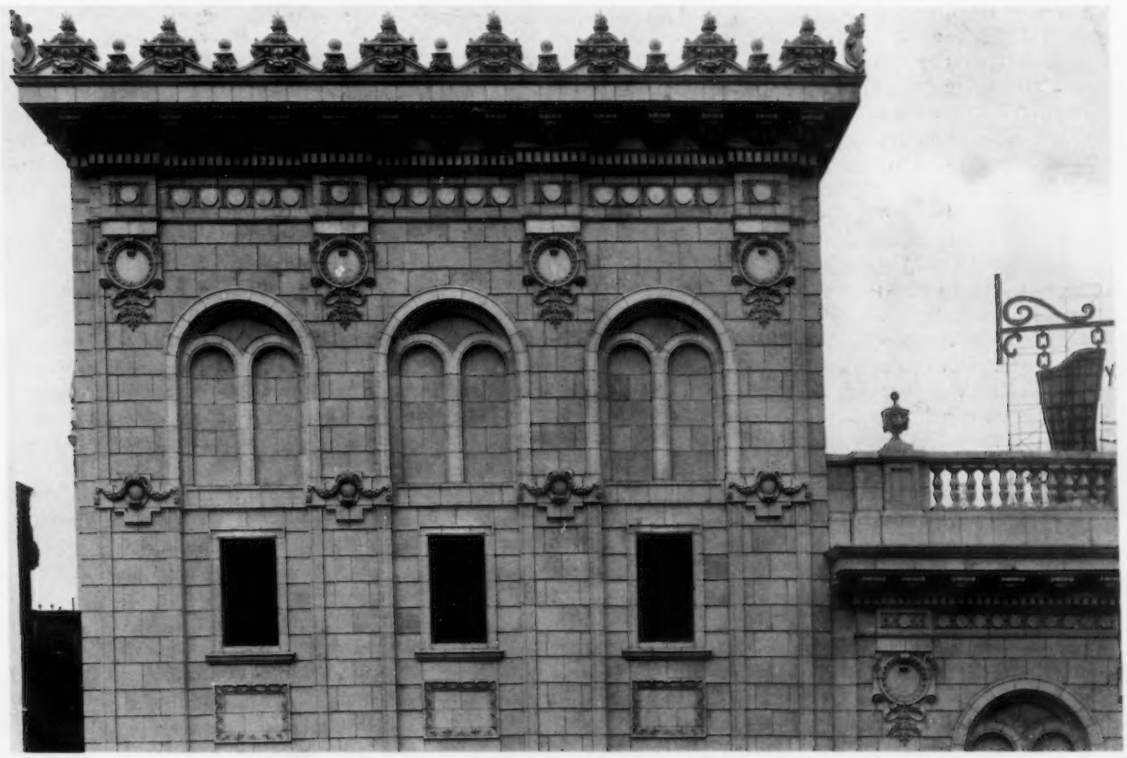
If there are any regrets they must be sought in California, the East has none to entertain. Elaborate, carefully considered arrangements had been made for the transportation of the delegates across the continent, and these were carried out without a break and in a most astonishingly satisfactory manner. A comfortable and even luxurious special train was provided by the Chicago and Northwestern R. R.; the agent who "personally conducted" the pilgrimage was a model of inconspicuous but efficient solicitude, the conductors were patient and cheerful, the porters devoid of the occasional arrogance of their kind, the food (etc.) excellent, varied and ample, though it was rumored that had the train been delayed a day in the snows of the Sierras, the "etc." would have been diminished to a point where it would have been necessary to put the passengers on half rations.

From Chicago across the Plains to Denver the trip was uneventful, except for the incessant labors of many committees and the furtive preparation of notes for extemporaneous and unexpected speeches by various private individuals. At Denver came the first experience with the near-West. Dazzling, snow-covered mountains rose like a rampart along a vigorous and enthusiastic city that produced an astonishing sequence of "seeing Denver" motors in which the delegates did it. In the evening the Denver Chapter was host at a fine banquet and at 2 A.M. the train — with a still intact quota — started south for its serpentine trip through the Rockies. This trip through the Grand Cañon of the Arkansas was a revelation of impossible painted mountains followed by wide snow-fields that faded away and gave place to the gray deserts and the lavender and white ranges that lie around Salt Lake City. Here admiration was divided between a city really beautiful in itself, the great organ in the Tabernacle (whereon much popular music "arranged" for this instrument was excellently played) and the astonishing ability of the ignorant and untrained old builders of the Tabernacle, to create an edifice that was a model of acoustics and construction.

ENTRANCE TO CHELSEA CITY HALL,
CHELSEA, MASS.
Executed in terra cotta by the New Jersey Terra Cotta Company.
Peabody & Stearns, Architects.

Beyond Salt Lake lay the long climb into the fastnesses of the Sierras. A cooling and salutary snow lay deep at Reno and there was word there that the passes were blocked with 12 feet thereof. At the moment, however, trains delayed forty-eight hours began to come in and the "Architects Special" advanced intrepidly into the white wilderness. Twelve feet of snow there was indeed; the mountain villages were practically extinguished, as were some of the delegates who ventured out with their kodaks at the not infrequent stops; sections of the forty miles of snowsheds had been carried away by avalanches and the train crept cautiously around the wild curves of the road in the midst of whirling snow. It was a world entirely white, mountains, trees, sky. Past the summit there came a long swinging coast down through a violet valley, around "Cape Horn," and then, at sunset, the level plain. At 3 o'clock we were in 12 feet of snow; at 6 girls with no hats and wearing shirtwaists were visible, with green grass under their feet; and at 10 P.M. two palm trees waved a welcome at Berkeley.

The anticipated hospitality of the Coast made its appearance with the shirtwaist girls, for at a way station (was it Poker Flat?) an outbound train transferred to the special one carload of roses, violets, daffodils, smilax, and branches of orange, lemon and palm. The dining car was transferred into a genuine palm-garden and the ladies of the party were overwhelmed with the scented greetings of California.



DETAIL OF THE GEORGE M. COHAN'S THEATRE, BROADWAY AND 43D STREET, NEW YORK CITY.
Terra cotta executed by the Atlantic Terra Cotta Company.
George Keister, Architect.

At first sight San Francisco looked surprisingly familiar; here was the well remembered "Ferry Building" and there in the distance the Call Building, with its lofty dome. All between and around was a solid and mature mass of business blocks, with no gaps, no vacant lots scored by crags of fire-scarred masonry. Down town it was as though the earthquake and fire had never been and the impression was simply that San Francisco was merely a little better off in point of commercial architecture than one remembered to have been the case. All was changed, however, as soon as one began the ascent of Nob Hill by one of the Alpine gradients that surely prove the city to be the most insanely planned of any in Christendom. Here were ruins enough and to spare, some of them vine-clad and startlingly picturesque, others gaunt and ominous in their forelorn abandonment. Along California street on the heights where the Fairmont Hotel lifts its enormous bulk, there is for several blocks, almost no rebuilding whatever, so far as the south side is concerned, and one is tempted to hope this always may remain the case, the view across the city

TRUMBULL SCHOOL, CHICAGO.
Brick by The Ohio Mining and Manufacturing Co., furnished by Thomas Moulding Company.
Dwight H. Perkins, Architect.

far below is so fine. To the north is one of the shocks of the rebuilding — miles, it seems, of cheap, three-story tenements, crowded close together, and all of wood. They told us the fireproof limits had been greatly widened, but as the eye swept the rolling miles of flimsy and inflammable tenements one wondered if the next great disaster in San Francisco would be as great as the last, or only second to it in its magnitude. This, and the failure to take any steps whatever to remedy the scandal of the preposterous plan — let alone the question of working out some minor part of the splendid scheme of civic improvements for which the fire seemed to make Providential provision, was the only real disappointment one could feel in the Phœnix City, and even this was forgotten for the moment in the light of the miraculous rehabilitation in four years of a great metropolis wiped out of existence and again restored.

RANDALL SCHOOL, MADISON, WIS.
Roofed with tile made by the Ludowici-Celadon Company.
Lew Porter, Architect.

Some Chapters were not represented at all and others but slenderly. New York came nobly to the fore with a big delegation. Boston could muster but three out of its quota of eleven, and two of these were directors. Philadelphia did better, but on the whole there was anything but a just numerical representation of the whole country. Naturally, therefore, business took the form of carefully digested committee reports, approval in principle of the several propositions, and a referring back to the Board for further consideration or final action.

DETAIL BY THE WINKLE TERRA COTTA COMPANY.

The formal functions came to an end with much good food and more good language on Thursday night when the San Francisco Chapter gave its great banquet for the members and guests of the convention; the speeches of the Bishop of California, Dr. Benjamin Ide Wheeler, and the Hon. James I. Phelan were particularly notable; unfortunately, Mr. La Farge was prevented from reading the speech he had prepared, but it has been printed in full and therefore is not lost. Its deep thought and clear vision serve to show those who were present at the banquet how much they lost — though fortunately only for the moment.

INTERIOR OF BERITH KODESH TEMPLE, ROCHESTER, N. Y.
Interior walls faced with Roman brick made by the Ironclay Brick Company.
Leon Stern, Architect.

It was a great convention, and great because it revealed the West to the East, and the East to the West; because it made each man realize that the other had something of personality and impulse that he could not get along without. There are scores of men happier to-day for the friendships revived or created, than a short month ago; the West retains and the East brings back a new inspiration in architecture, and the nation is better off because a few hundred of its citizens have found out how large it is, how compounded of different elements, and how indispensable each one of these is to the other.

CONVENTION OF BRICK MAKERS.

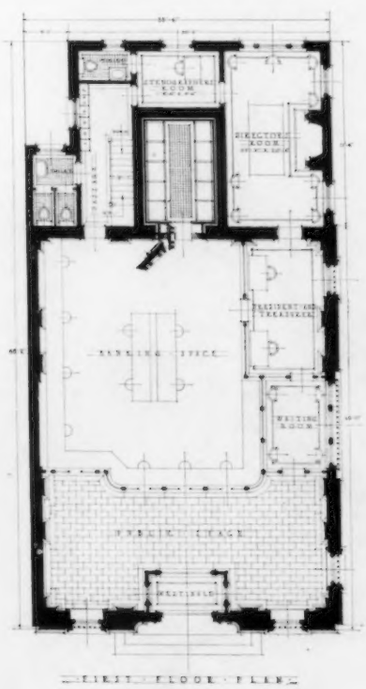
THE annual meeting of the Building Brick Association of America was held in the Hotel Seelbach, Louisville, Ky., February 7th, 8th and 9th. The meeting was largely attended by leading clay workers, who planned a campaign in behalf of brick as a building material which is likely to be felt throughout the country. The work of the association has been directed largely to an investigation to determine the comparative cost of brick construction with other materials, and the creation of a wholesome literature setting forth the value of brick, considered æsthetically or constructively.

The following officers were elected for the ensuing year: President, R. L. Queisser, Cleveland; vice-president, Ralph Simpkins, St. Louis; secretary-treasurer, Parker Fiske, New York. There are twenty-seven directors of the association, the majority of whom are the leading manufacturers of building brick in this country.

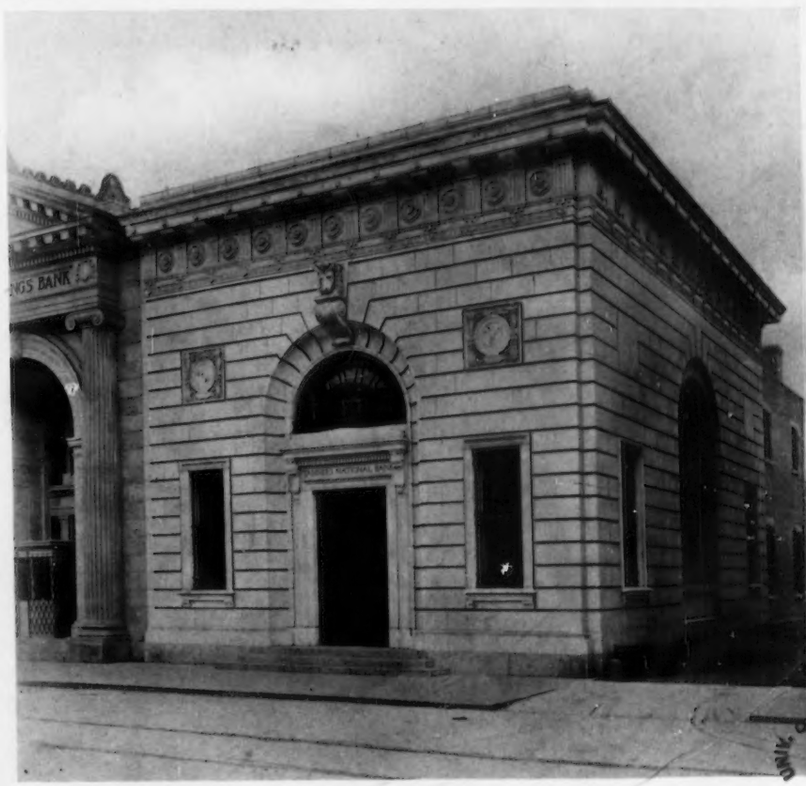
IN GENERAL.

The American Academy in Rome announces competitions for the Prizes of Rome in Architecture,

TANNERS NATIONAL BANK
CATSKILL, N. Y.
MARCUS T. REYNOLDS, ARCHITECT.



FIRST FLOOR PLAN.



DETAIL OVER ENTRANCE OF HOTEL.
Executed by The Northwestern Terra Cotta Company.
Marshall & Fox, Architects.

Sculpture and Painting. Persons wishing to take part in the competitions must make written application to the secretary of the Academy, Francis D. Millet, 6 East 23d street, New York City, not later than March 15, 1911.

The National Brick and Clay Products Exhibition will be held in Chicago during January, 1912. The various branches of the clay industry of this country will be fittingly represented at this exhibition. Further announcement will be made in these columns when the whole program has been developed.

E. Roy Sholes & Co., architects, have opened offices at 171 Washington street, Chicago.

Louis Boucherle, and son Paul, have formed a partnership for the practice of architecture, with offices in the Stambaugh Building, Youngstown, Ohio.

DETAIL OF PUBLIC SCHOOL NO. 19, BROOKLYN, N. Y.
Executed by Brick, Terra Cotta & Tile Company.
C. B. J. Snyder, Architect.

Theo. C. Kistner, architect, has opened an office at 1047 Fifth street, San Diego, Cal.

Manufacturers' samples and catalogues desired.

Mauran & Russell would be pleased to receive manufacturers' catalogues and samples at their Houston, Texas, office, 930 Chronicle Building.

William D. Hewitt, Alfred H. Granger and Phineas E. Paist have formed a partnership for the practice of architecture under the name of Hewitt, Granger & Paist, with offices at 671 Bullitt Building, Philadelphia.

Vonnegut and Bohn, architects, 610 Trust Building, Indianapolis, announce that Kurt Vonnegut and Otto N. Mueller have become members of the above mentioned firm.

Arthur R. Koch and Charles C. Wagner have formed a co-partnership for the practice of architecture under the firm name of Koch & Wagner, with offices at 26 Court street, Brooklyn.

Charles S. Frost and Alfred H. Granger, architects, announce the dissolution of their partnership. Mr. Frost will continue the practice of architecture at the present address, 181 La Salle street, Chicago.

Thomas W. Lamb, architect, announces the removal of his offices to 501 Fifth avenue, New York City.

APARTMENT HOUSE, NEW YORK CITY.
Terra cotta furnished by the New York Architectural Terra Cotta Company.
Waid & Willaner, Architects.

Verus T. Ritter, architect, has opened an office in the Ritter Building, Huntington, West Va. Mr. Ritter is also a member of the firm of Ritter & Stetler, architects, 17 West Third street, Williamsport, Pa.

A. Raymond Ellis has been chosen architect for the new Heublein Hotel to be erected at Hartford, Conn., at a cost of $1,000,000. Mr. Ellis was a competitor in the competition for a hotel recently conducted by THE BRICKBUILDER.

Eli Benedict, architect, will continue to conduct for the coming season classes in architectural drawing, plan reading and estimating, at the night school of the Y. M. C. A., West 23d street, New York City. Mr. Benedict also gives individual atelier instruction at his offices 1947 Broadway.

The Atlantic Terra Cotta Company will furnish architectural terra cotta for the following new buildings: East River Bank, New York City, Clinton Russell, architects; Knickerbocker Trust Building, New York City,

McKim, Mead & White, architects; State Educational Building, Albany, Palmer & Hornbostel, architects; Southern Building, Washington, D. C., D. H. Burnham & Co., architects; Athletic Club, Pittsburg, exterior of building and swimming pool, Janssen & Abbott, architects; Psycopathic Hospital, Boston, Kendall, Taylor & Co., architects; Bevier Memorial, Rochester, N. Y. Claude Bragdon, architect.

DETAIL OF BANK, UNION, N. J.
Executed by the Conkling-Armstrong Terra Cotta Company.
Crow, Lewis & Wickenhoefer, Architects.

Linoleum and cork carpet, which is secured by waterproof glue to cement and other kinds of floors, is being supplied by John H. Pray & Sons Co., Boston, not only to many of the new government buildings, hotels, theaters, churches, hospitals, clubs and other types of public and semi-public buildings, but to older buildings of the classes mentioned as well.

Stephen B. Goossen and Norman H. Feldmann, architects, have formed a co-partnership and taken offices in the Chamber of Commerce, Detroit. Manufacturers' samples and catalogues desired.

WANTED — Position in architect's office by a graduate of one of the best architectural schools. Twelve years' experience in the execution of important work. Middle West preferred. For particulars address "H. E. C.," care of The Brickbuilder.

PARTNERSHIP WANTED — Would you like for a partner an industrious young man of good habits, a licensed architect of ability and experience capable of designing and executing the best class of work? References given and required. Address F. D., care of The Brickbuilder.

"SPECIFICATION BLANKS," by T. Robert Wieger, architect (formerly with F. E. Kidder). Forms for all classes of buildings, each trade separate. Complete set, 44 pages, 25 cents. Reduction on quantities. Sample page upon request. 628-14th street, Denver, Colo.

ARCHITECTS AND DRAFTSMEN—I REGISTER ASSISTANTS FOR THE ARCHITECTURAL PROFESSION EXCLUSIVELY IN AND FOR ANY PART OF THE UNITED STATES. HAVE CALLS FOR HELP CONTINUALLY FROM THE BEST OF OFFICES IN ALL PARTS OF THE COUNTRY. MY LIST CONSISTS OF THE HIGHEST GRADE TECHNICAL MEN. NO REGISTRATION FEE AND REASONABLE TERMS. IF YOU ARE NEEDING HELP OR SEEKING A GOOD POSITION, WRITE ME. LEO A. PEREIRA, 218 La Salle St., Chicago. Long Distance Tel., Franklin 1328.

A BOOK OF HOUSE DESIGNS — THE TITLE OF A 64 PAGE BOOKLET WHICH CONTAINS THE DESIGNS SUBMITTED IN COMPETITION FOR A HOUSE BUILT OF TERRA COTTA HOLLOW TILE. ILLUSTRATIONS OF HOUSES BUILT OF THIS MATERIAL, TOGETHER WITH ARTICLES DESCRIBING CONSTRUCTION, ETC. PRICE 50 CENTS. ROGERS & MANSON, BOSTON.

A HOUSE OF BRICK OF MODERATE COST— THE TITLE OF A 96 PAGE BOOKLET WHICH CONTAINS 71 DESIGNS FOR A BRICK HOUSE OF MODERATE COST. THESE DESIGNS WERE SUBMITTED BY WELL-KNOWN ARCHITECTURAL DRAFTSMEN IN COMPETITION. INTERESTING ARTICLES. ILLUSTRATIONS OF HISTORICAL BRICK HOUSES. PRICE, FIFTY CENTS. ROGERS & MANSON, BOSTON.

"TAPESTRY" BRICK
TRADE MARK—REG. U. S. PATENT OFFICE

BULLETIN

RECENT WORK, illustrated in this issue of THE BRICKBUILDER

Sherman Memorial Dispensary, Yonkers, N. Y. . Plate 28
G. Howard Chamberlin, Architect

FISKE & COMPANY INC
FACE BRICKS ESTABLISH
FIRE BRICKS ED IN 1864

25 Arch St., Boston **Flatiron Building, New York**

LINOLEUM
SECURED BY CEMENT TO EITHER WOODEN OR CEMENT FLOORS

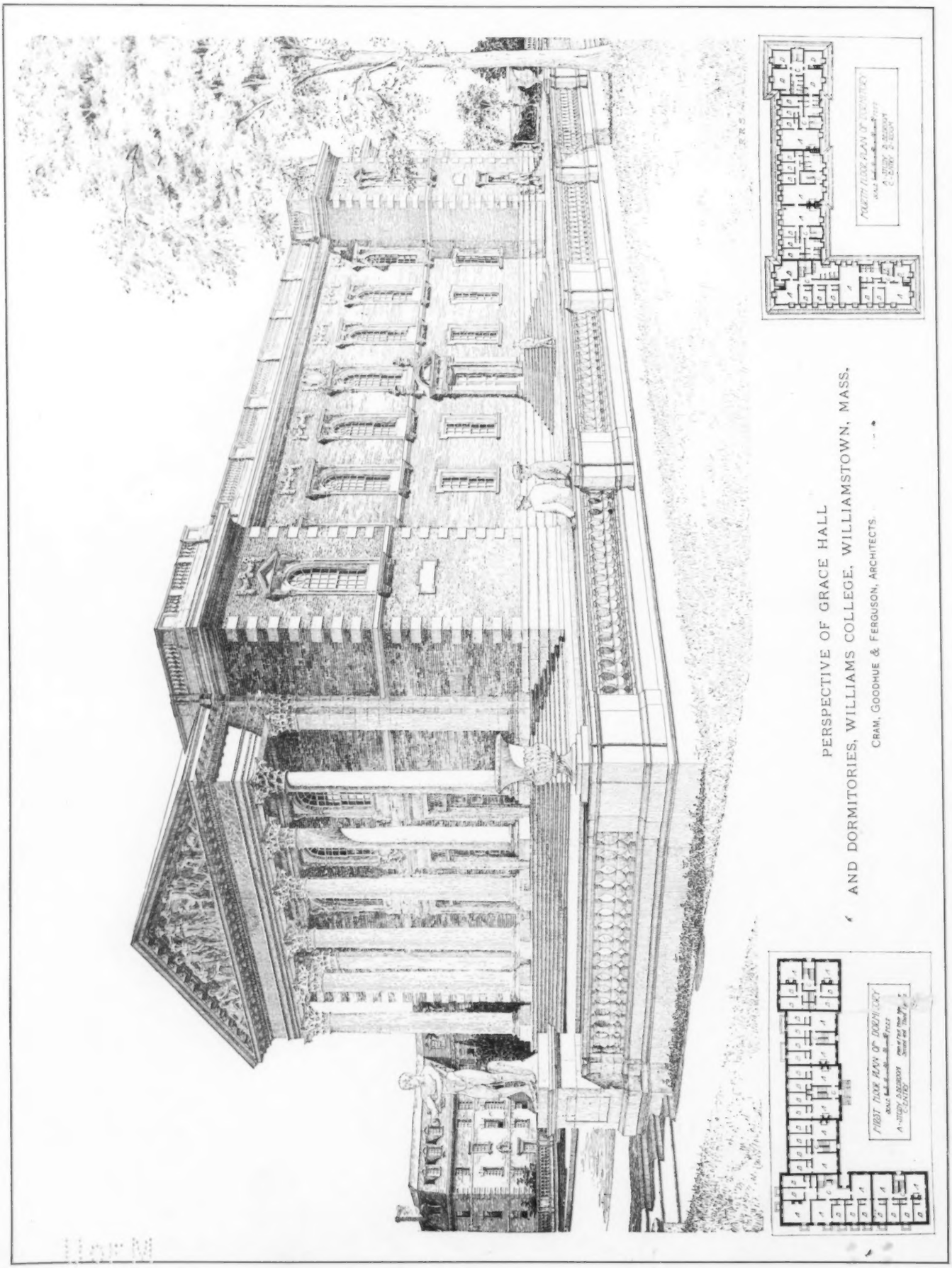
Ideal Floor Coverings for Public Buildings. Elastic, Noiseless, and practically indestructible. It is in use on Battleships, cemented to steel decks in the United States, English and German Navies; should be placed on floors under pressure, and best results can only be obtained by employing skilled workmen.

The quality of our work has passed the inspection of the United States Government and numerous Architects and Builders.

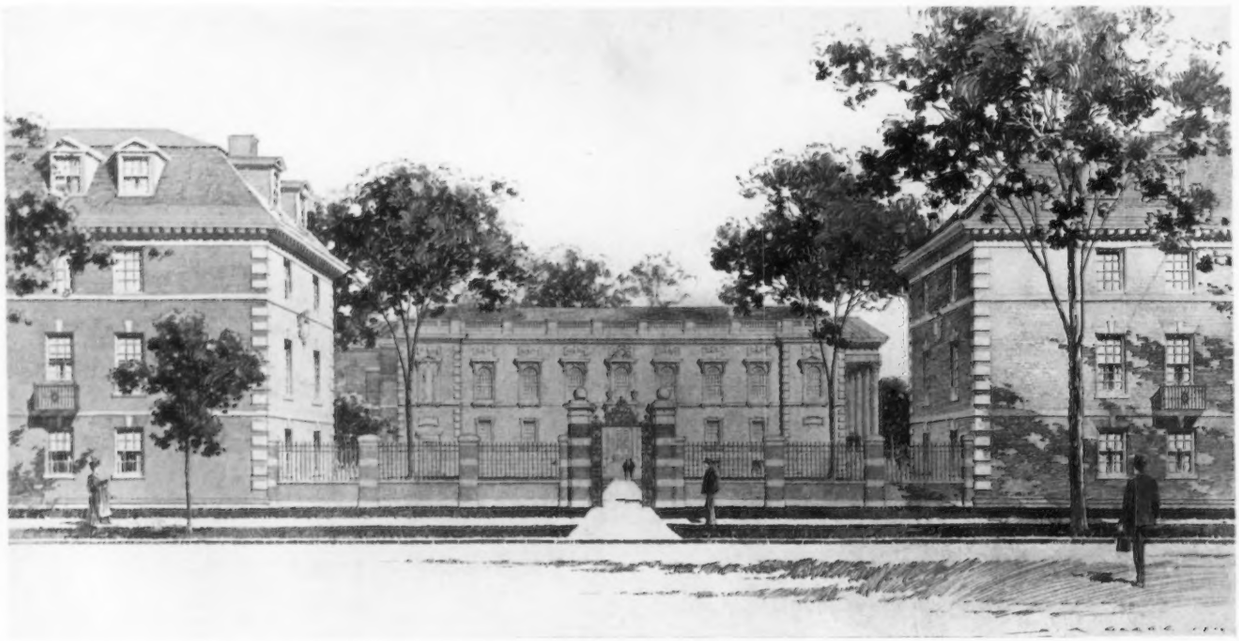
The following buildings have been supplied with our Linoleum:
Hotel Touraine, Boston.
Hotel Lenox, Boston.
Hotel Bellevue, Boston.
Hotel Buckminster, Boston.
Hotel Vendome, Boston.
Parker House, Boston.
Adams House, Boston.
(See new list each month)

We solicit inquiries and correspondence.

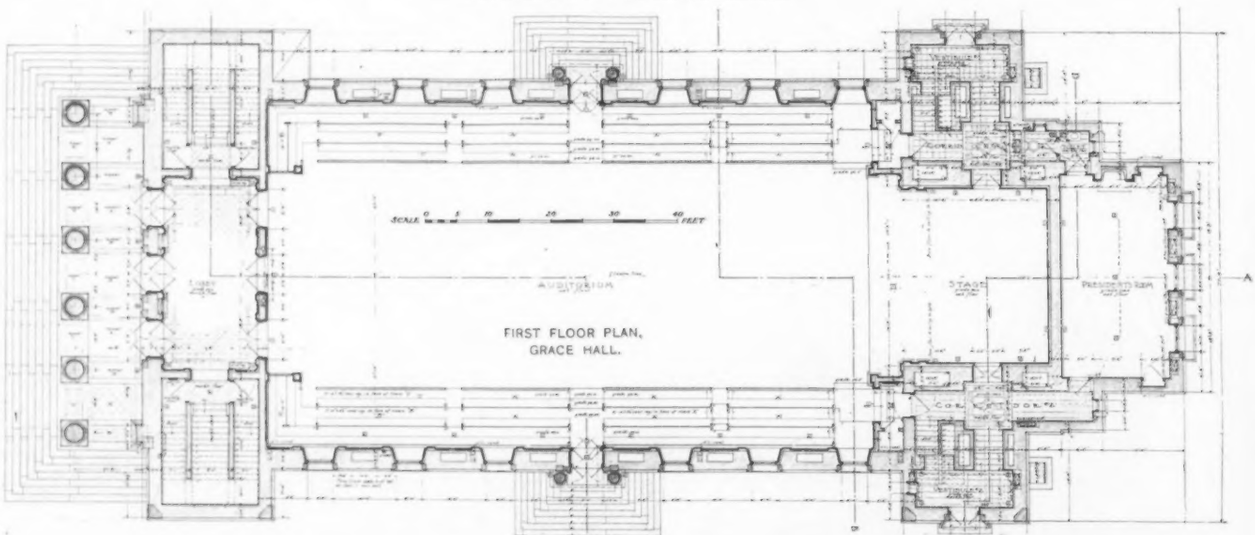
JOHN H. PRAY & SONS COMPANY
646-658 WASHINGTON STREET, Opp. Boylston Street
BOSTON : : : : : : : : : MASS.



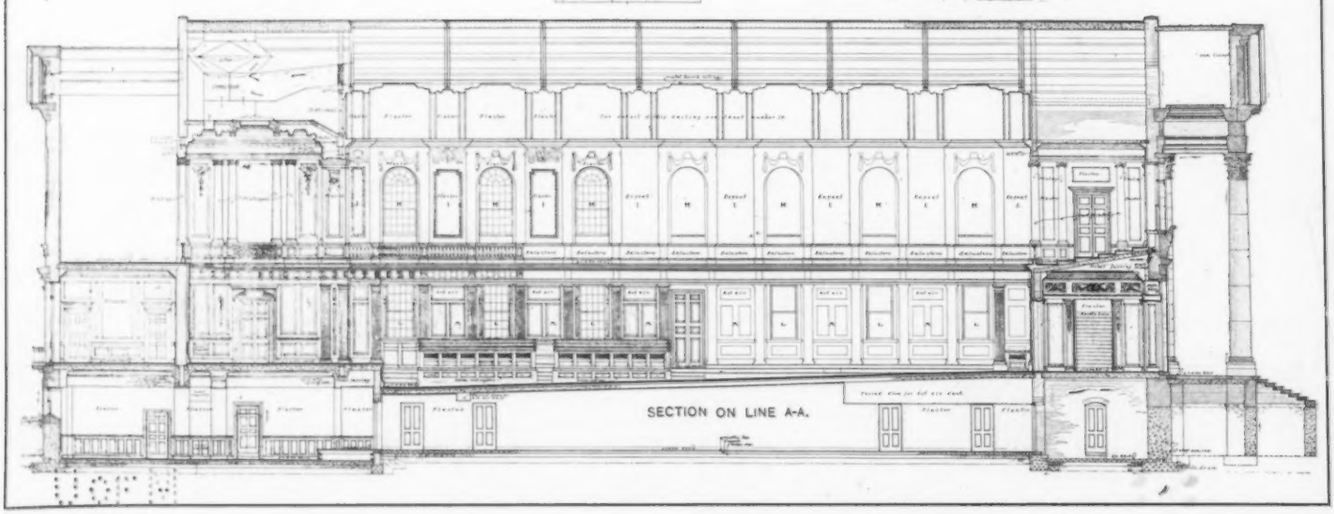
PERSPECTIVE OF GRACE HALL
AND DORMITORIES, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.



PERSPECTIVE OF GRACE HALL AND DORMITORIES, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.

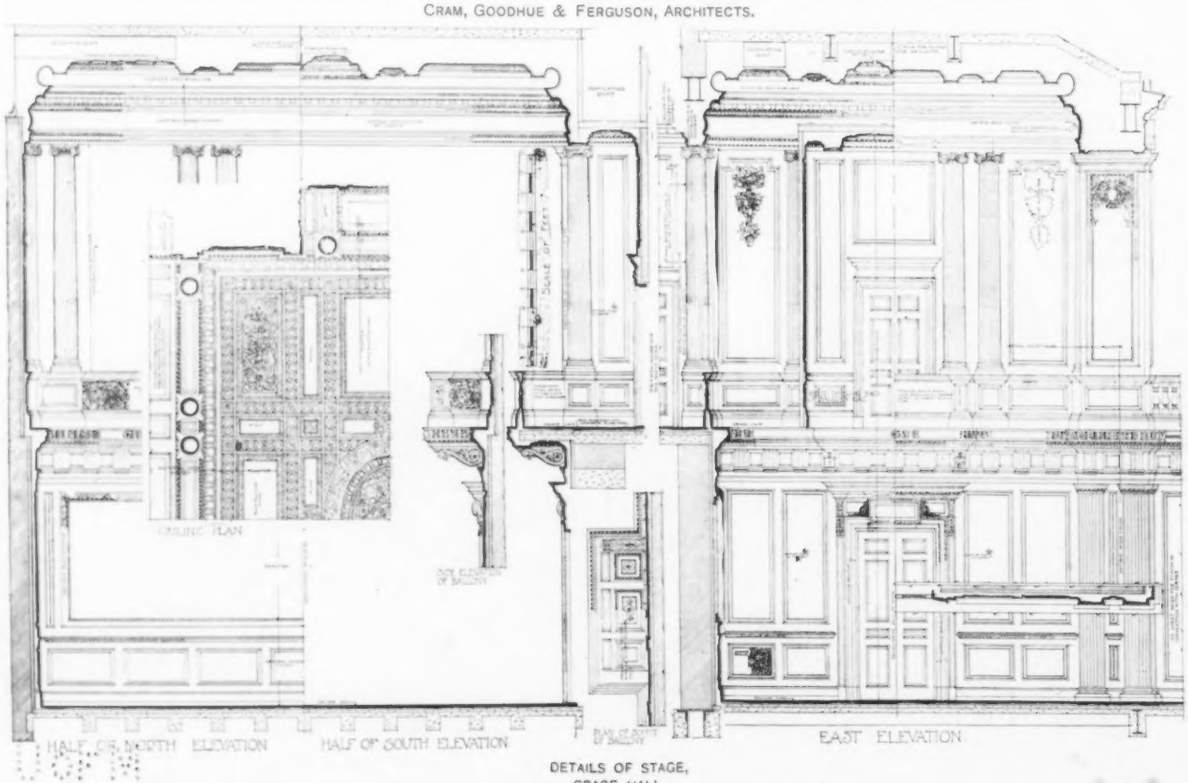


FIRST FLOOR PLAN,
GRACE HALL.

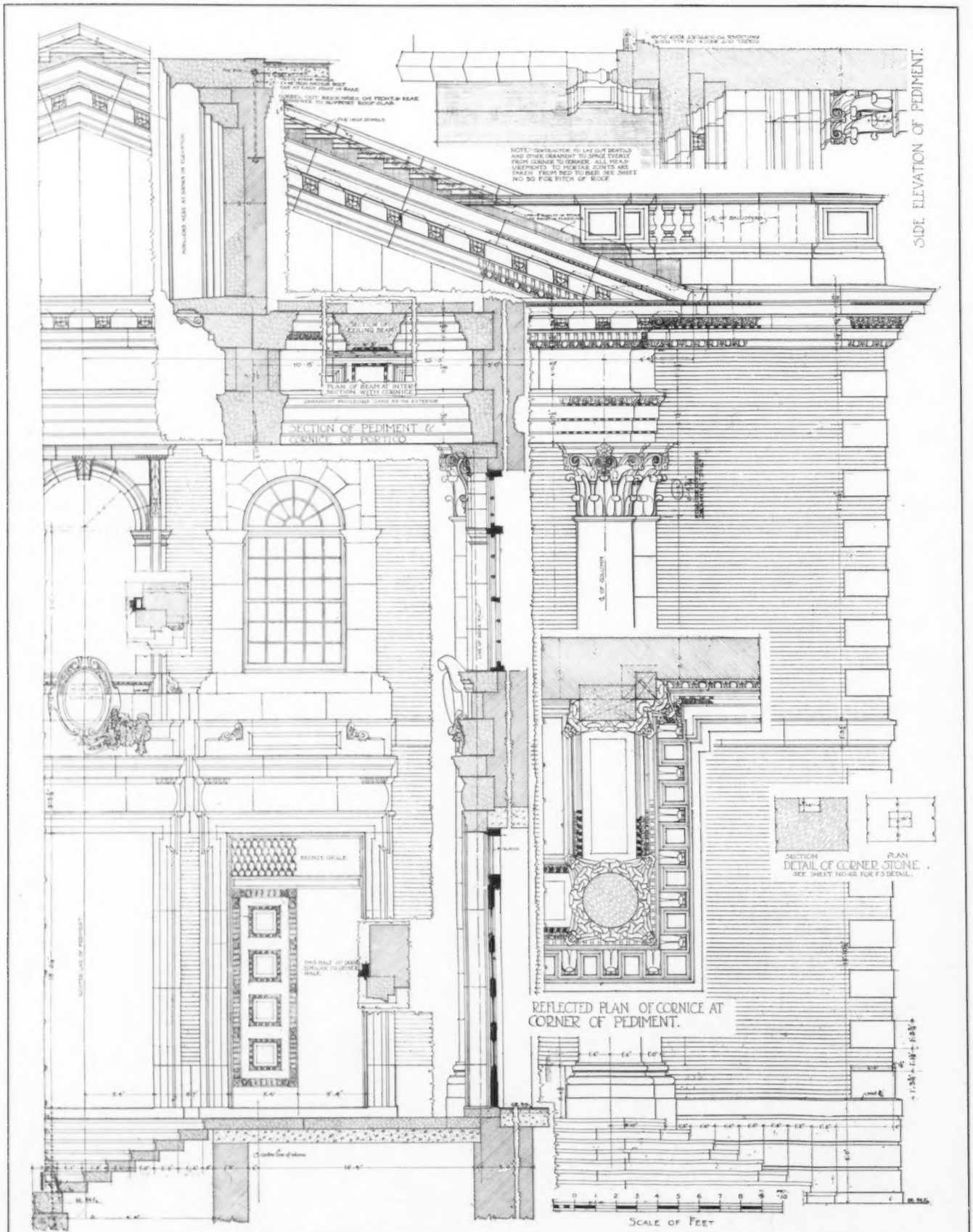


SECTION ON LINE A-A.

PERSPECTIVE OF QUADRANGLE,
GRACE HALL AND DORMITORIES, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.

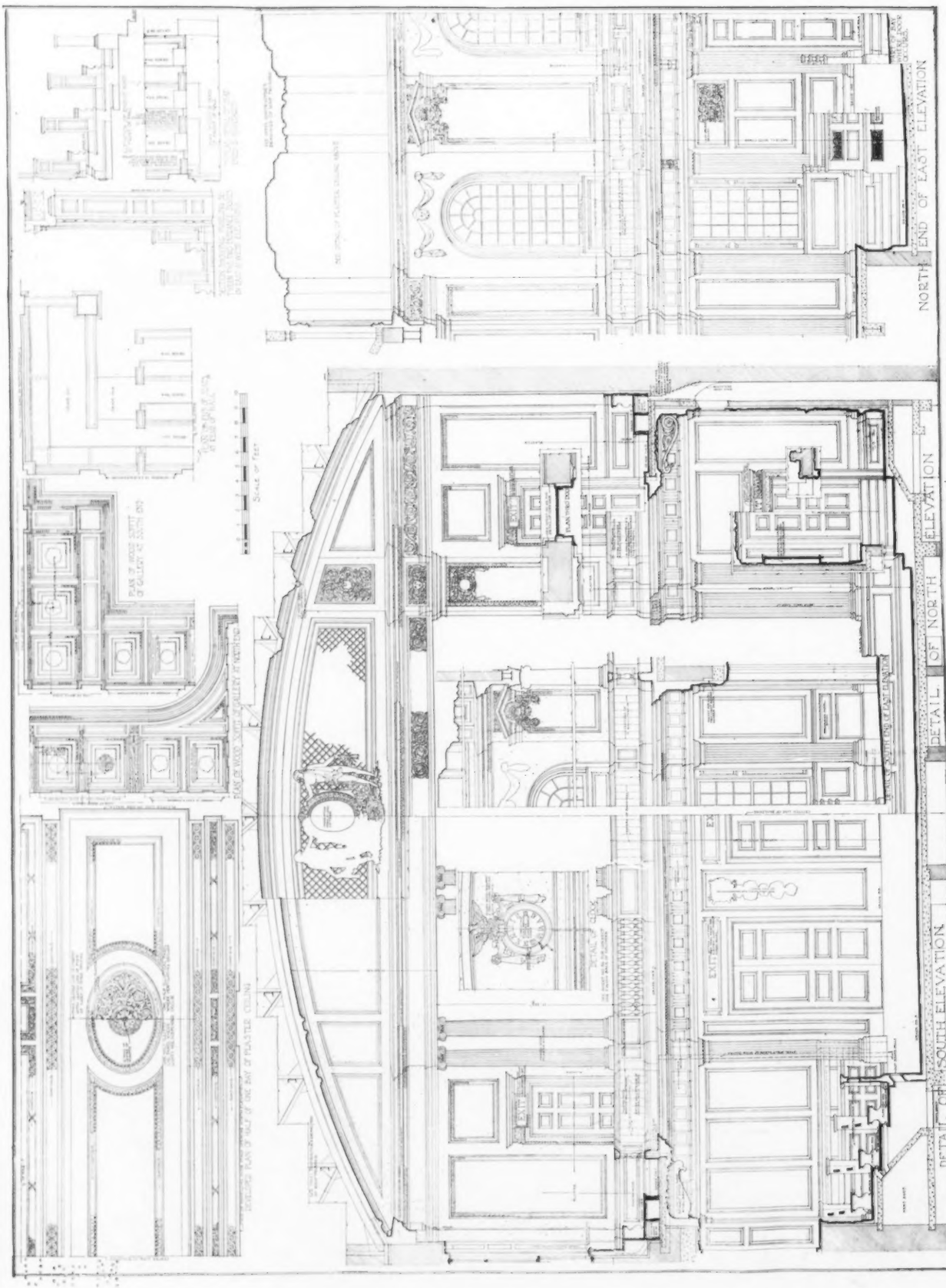


DETAILS OF STAGE,
GRACE HALL.


SIDE ELEVATION OF PEDIMENT.
SECTION OF PEDIMENT & CORNICE OF PORTICO
PLAN OF BEAM AT INTERSECTION WITH CORNICE
SECTION OF CEILING BEAM
REFLECTED PLAN OF CORNICE AT CORNER OF PEDIMENT.
SECTION
PLAN
DETAIL OF CORNER STONE.
SCALE OF FEET

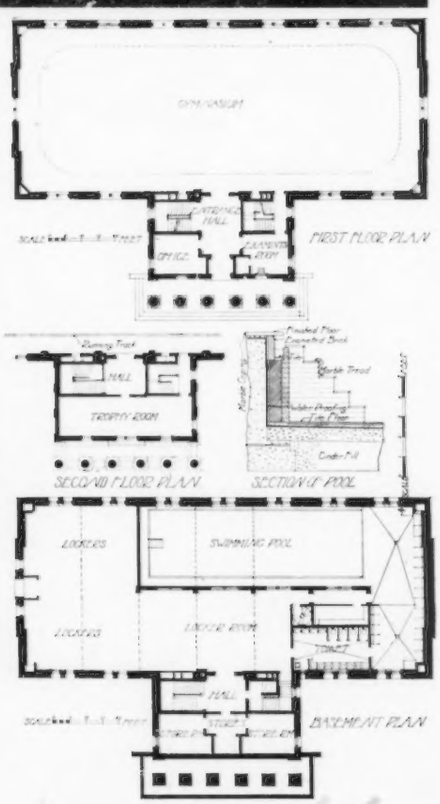
EXTERIOR DETAILS OF SOUTH ELEVATION, GRACE HALL, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.

CRAM, GOODHUE & FERGUSON, ARCHITECTS.



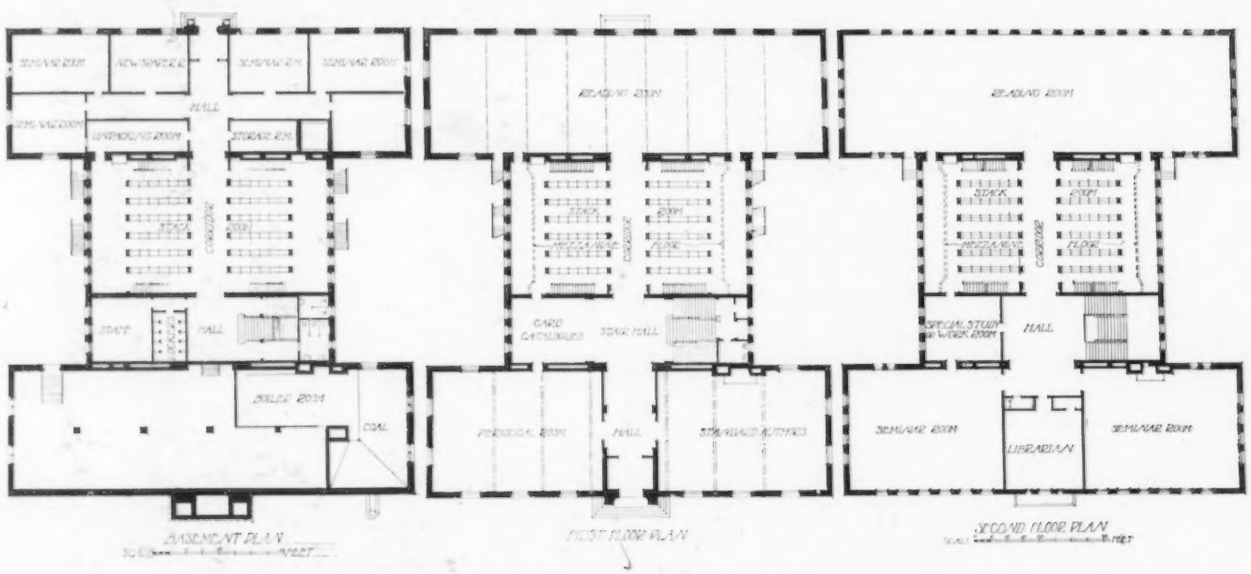
DETAILS OF AUDITORIUM, GRACE HALL, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.

CRAM, GOODHUE & FERGUSON, ARCHITECTS.



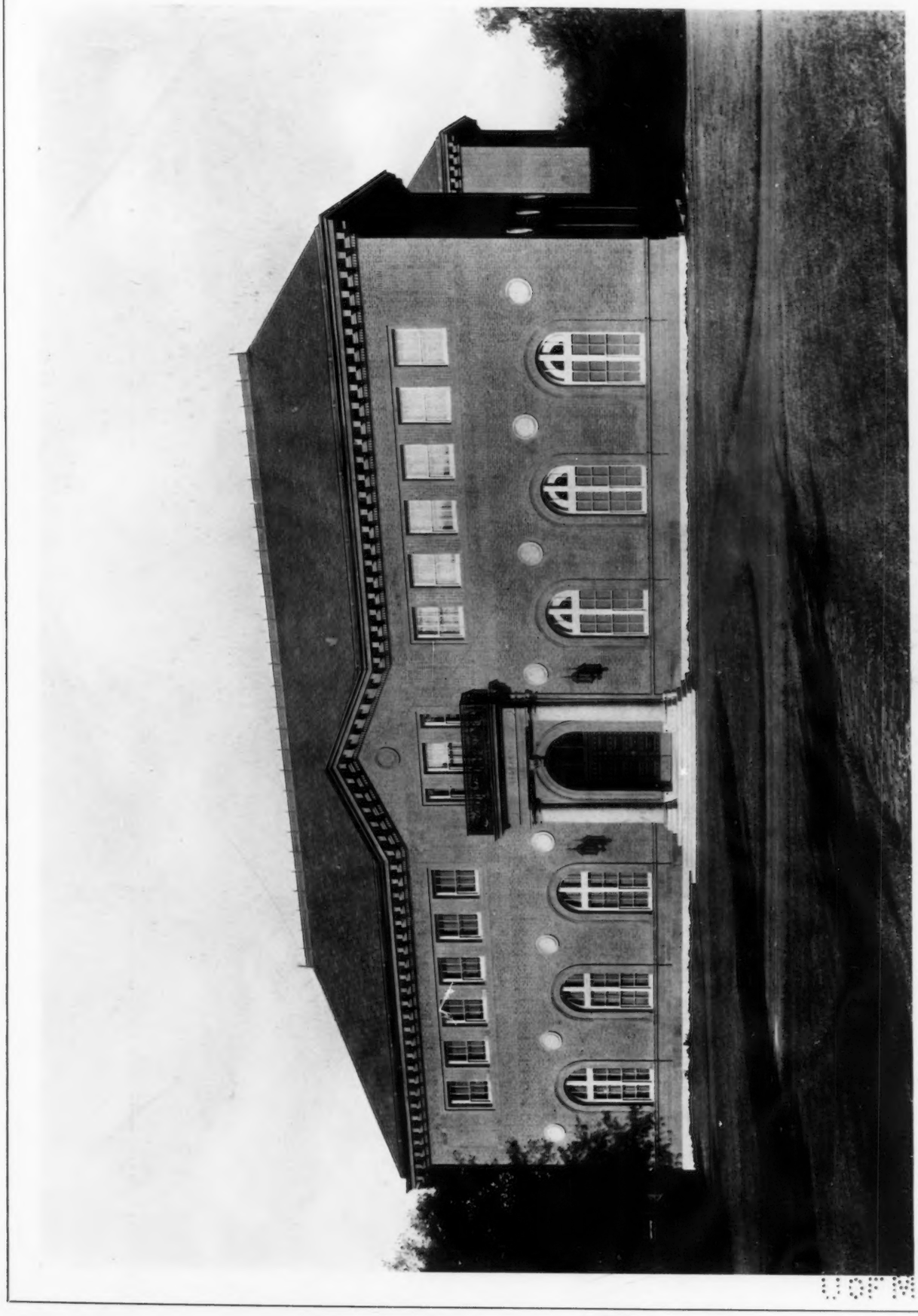
GYMNASIUM, MT. HERMON SCHOOL FOR BOYS, MT. HERMON, MASS.
PARISH & SCHROEDER, ARCHITECTS.

UofM



LIBRARY, SMITH COLLEGE, NORTHAMPTON, MASS.

LORD & HEWLETT, ARCHITECTS.



LIBRARY, SMITH COLLEGE, NORTHAMPTON, MASS.
LORD & HEWLETT, ARCHITECTS.

END OF THE BUILDING. SECTION AND ELEVATION OF MAIN ENTRANCE.

DETAILS OF FRONT ELEVATION

SCALE 0 5 10 15 20 25 30 FEET

LIBRARY, SMITH COLLEGE, NORTHAMPTON, MASS.

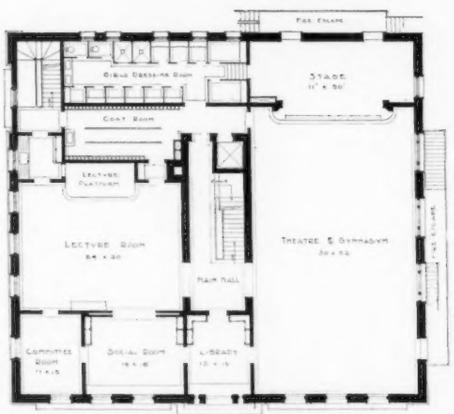
LORD & HEWLETT, ARCHITECTS.

U of M

WOMEN'S UNION, FALL RIVER, MASS.
PARKER MORSE HOOPER, ARCHITECT.

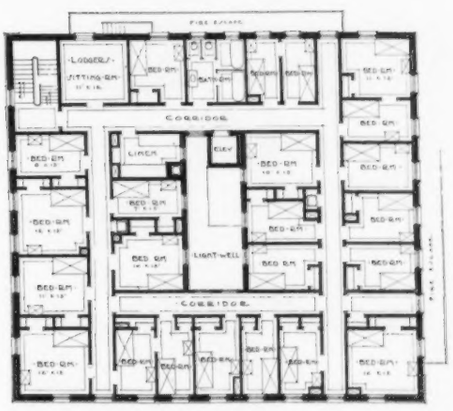
EAST ENTRANCE.

MAIN ENTRANCE.

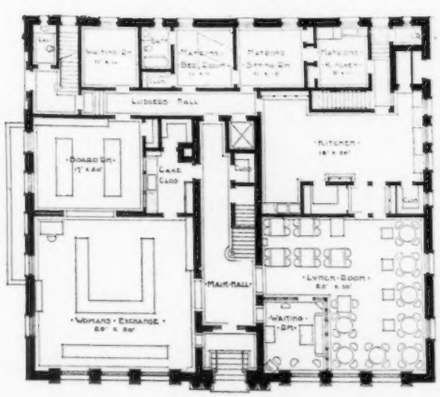


SECOND FLOOR PLAN.

WOMEN'S UNION,
FALL RIVER.
MASS.

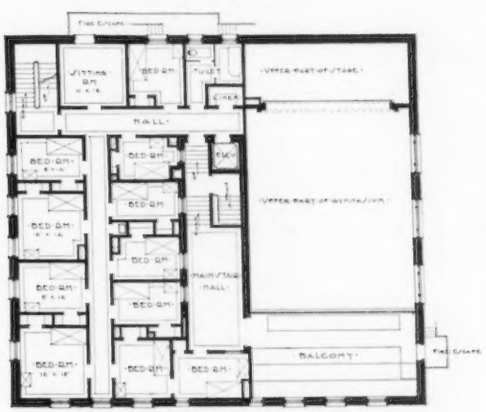


FOURTH FLOOR PLAN



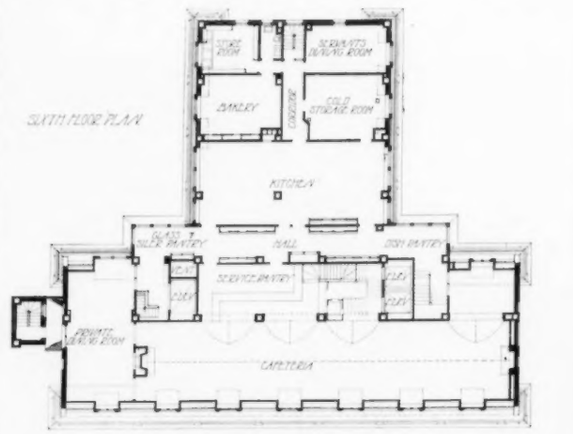
FIRST FLOOR PLAN.

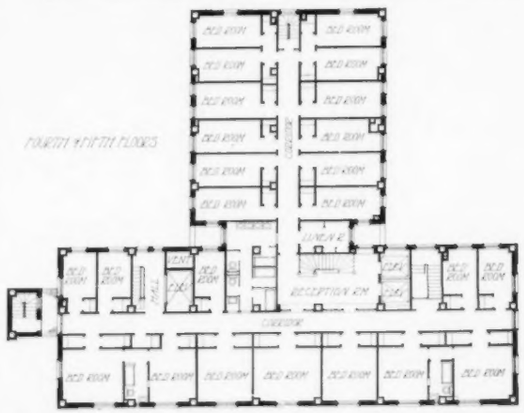
PARKER MORSE HOOPER,
ARCHITECT.

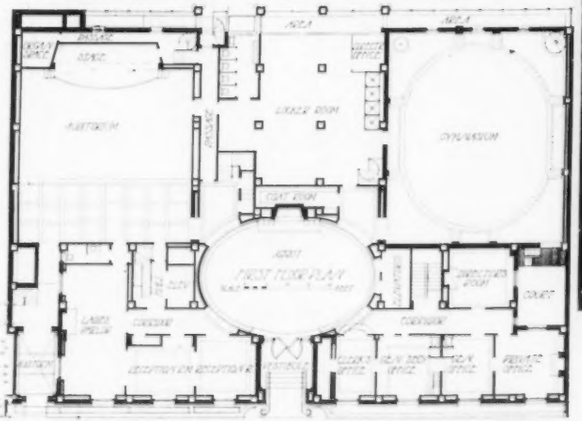


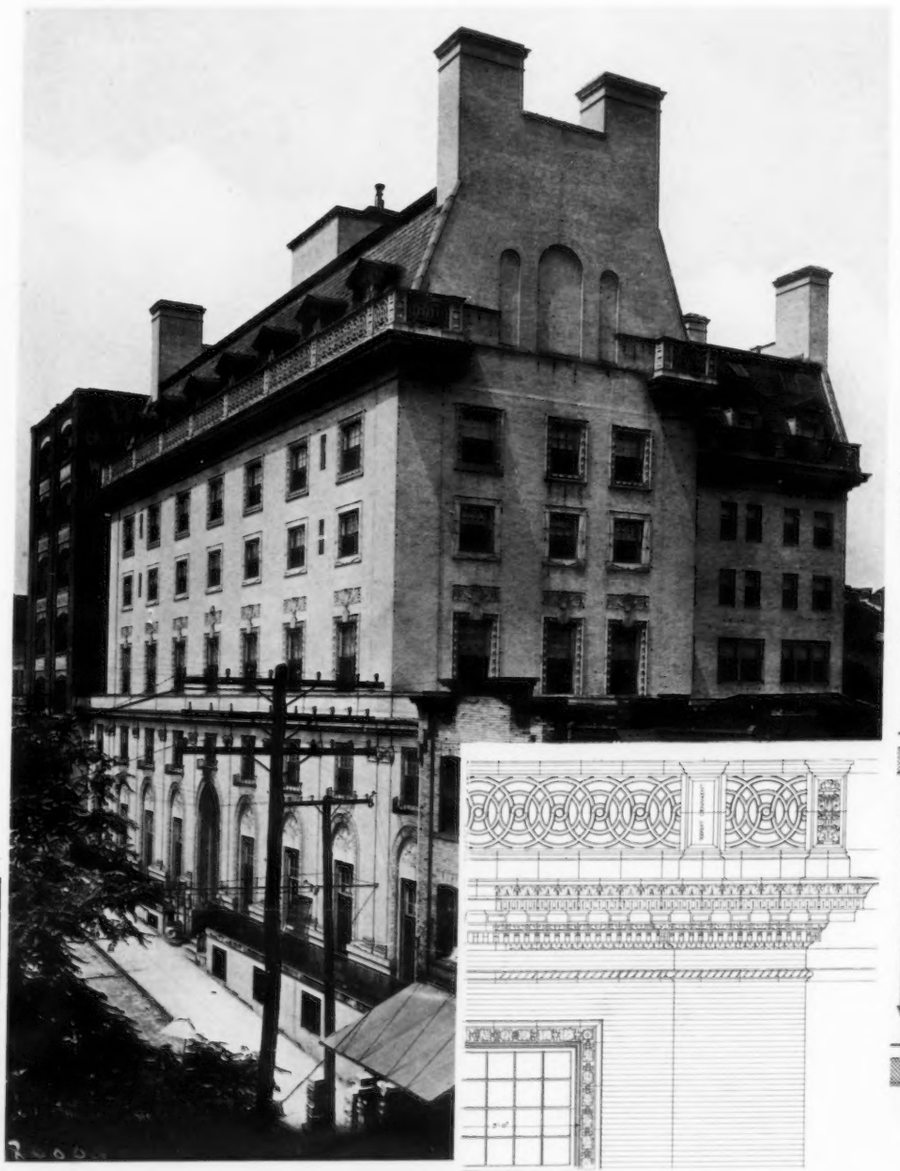
THIRD FLOOR PLAN.

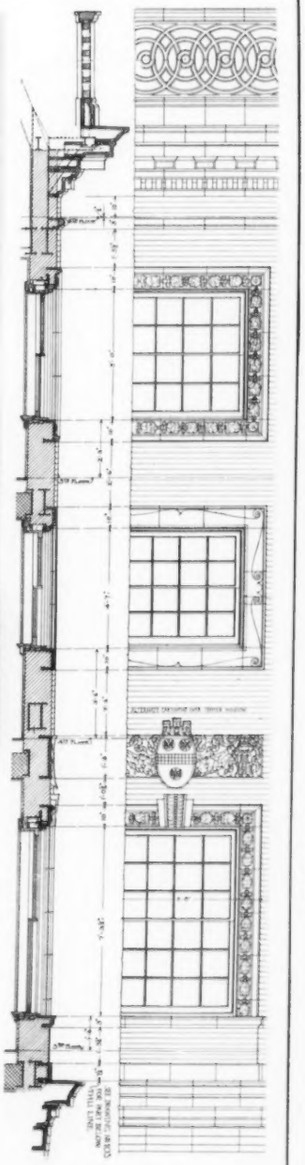
Mrau







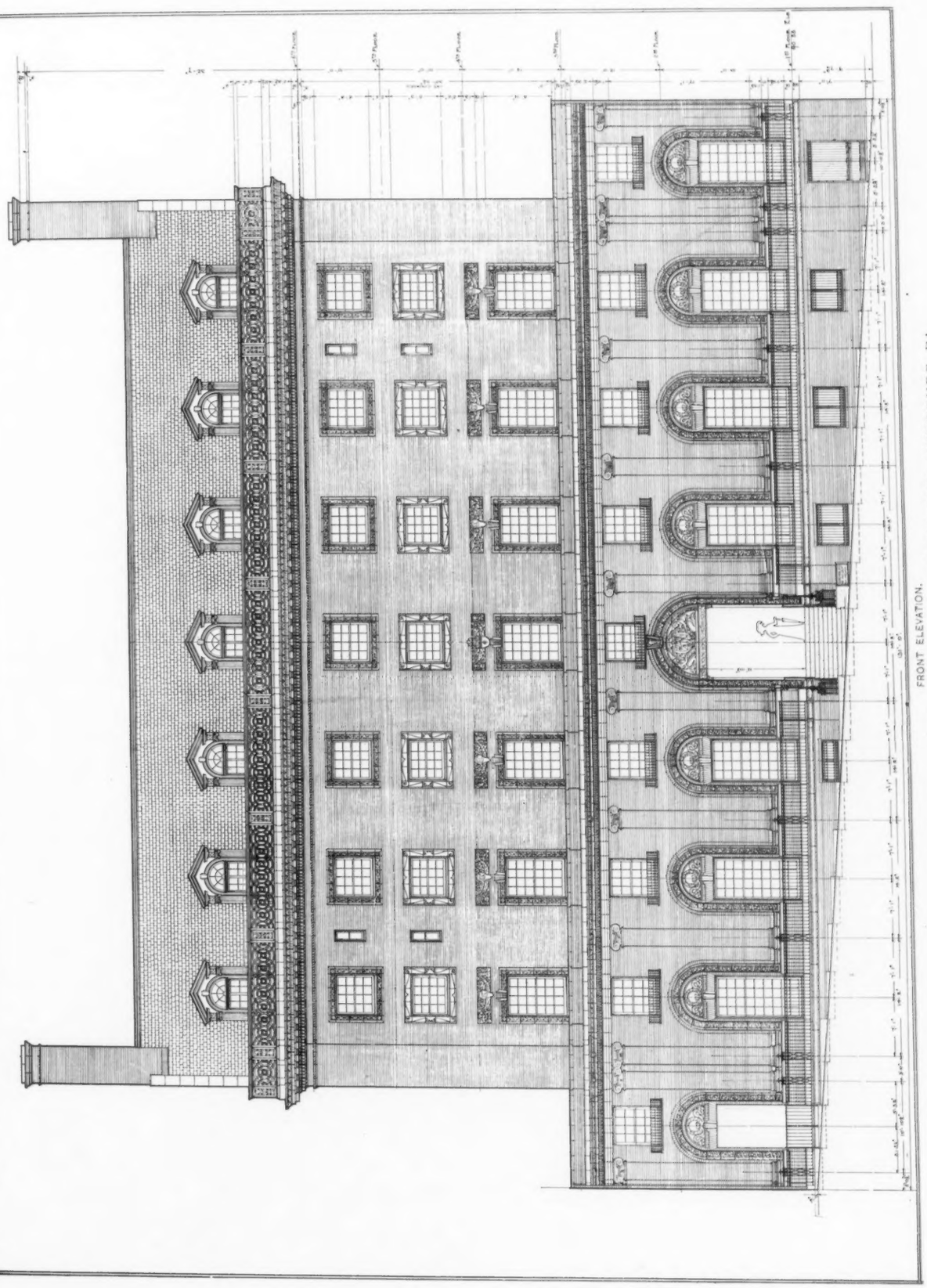




EXTERIOR DETAIL.

CENTRAL YOUNG WOMEN'S CHRISTIAN ASSOCIATION, PITTSBURG, PA.

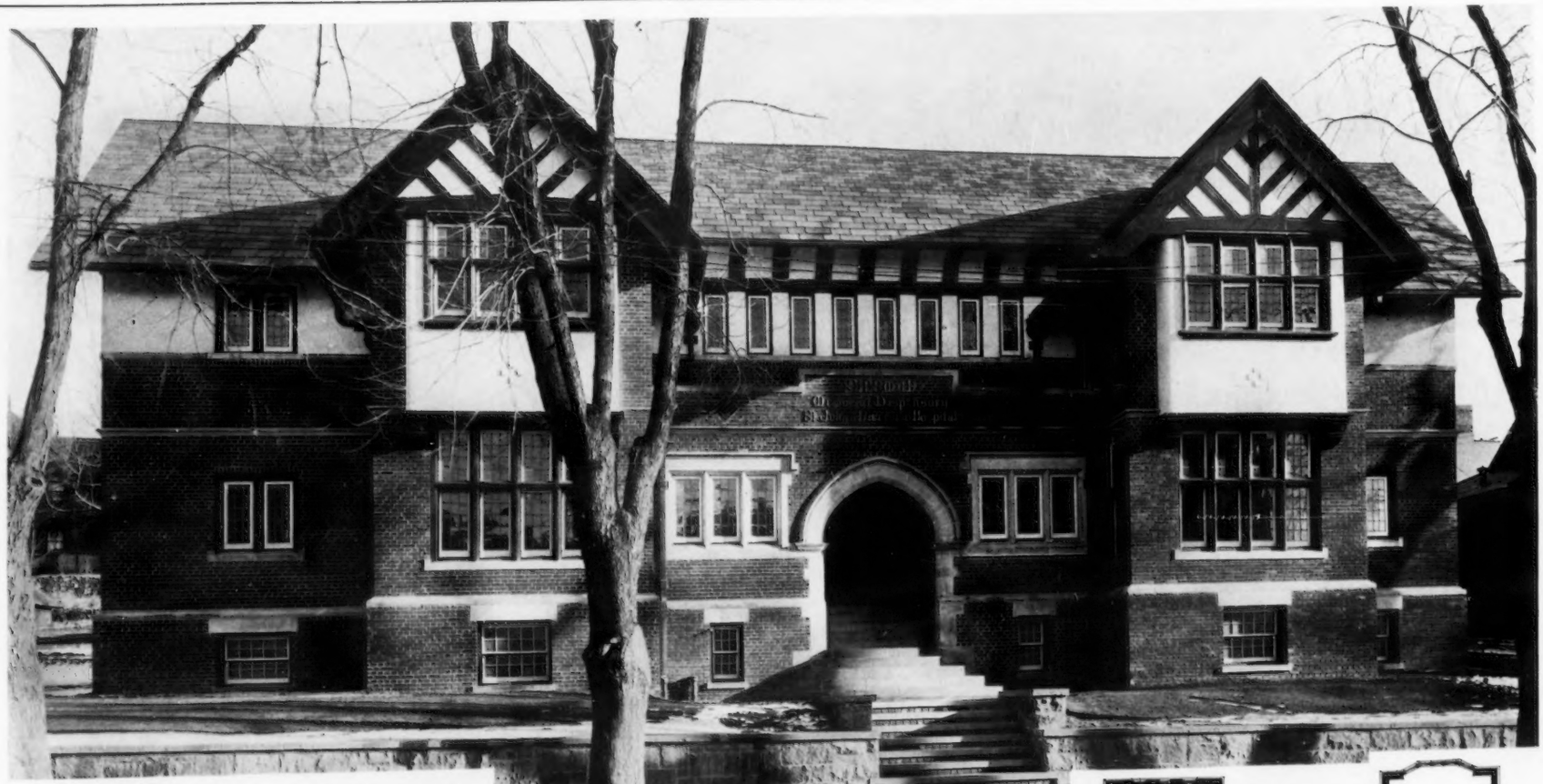
JANSSEN & ABBOTT, ARCHITECTS.

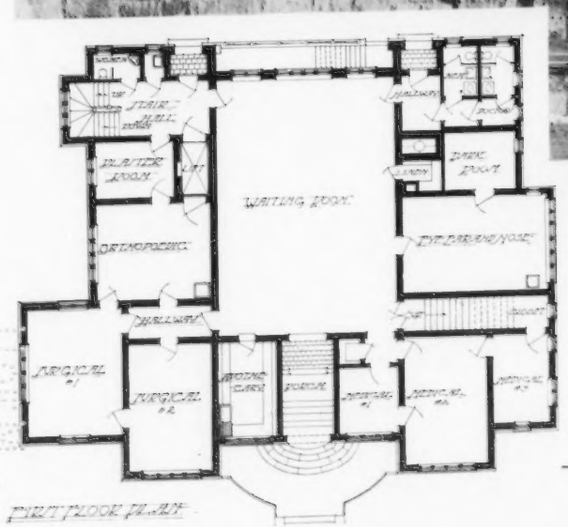


FRONT ELEVATION.

CENTRAL YOUNG WOMEN'S CHRISTIAN ASSOCIATION, PITTSBURG, PA.

JANSSEN & ABBOTT ARCHITECTS.

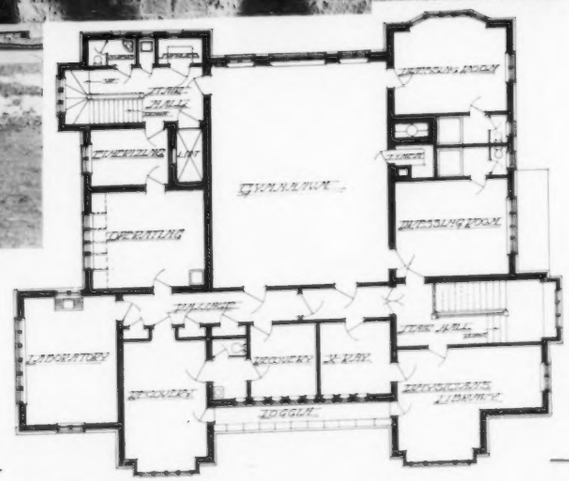




FIRST FLOOR PLAN

SHERMAN MEMORIAL DISPENSARY,
ST. JOHN'S RIVERSIDE HOSPITAL,
YONKERS, N. Y.

G. HOWARD CHAMBERLIN, ARCHITECT.



SECOND FLOOR PLAN